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BULLETIN No. 127.

NOVEMBER 1908.

MASSACHUSETTS
AGRICULTURAL EXPERIMENT
STATION.

INSPECTION OF
COMMERCIAL FERTILIZERS

BY

H. D. HASKINS, L. S. WALKER and J. C. REED.

This bulletin presents the results of analyses of commercial fertilizers sold in Massachusetts during the season of 1908. It briefly discusses the essential constituents of fertilizers and the sources from which they are derived. Retail cash prices and valuations are given, and the selection and purchase of high grade fertilizers recommended. Summaries show the general condition of the fertilizer industry.

Requests for bulletins should be addressed to the
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AMHERST, MASS.

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Annual reports and bulletins on a variety of subjects are published. These are sent free on request to all interested in agriculture. Parties likely to find publications on special subjects only of interest will please indicate these subjects. Correspondence or consultation on all matters affecting any branch of our agriculture is welcomed. Communications should be addressed to the

AGRICULTURAL EXPERIMENT STATION,
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DEPARTMENT OF PLANT AND ANIMAL CHEMISTRY.

J. B. LINDSEY, Chemist.

Inspection of Commercial Fertilizers

FOR THE SEASON OF 1908

By H. D. HASKINS, Chemist in Charge.

ASSISTED BY

L. S. WALKER and J. C. REED.*

The full text of the fertilizer law of Massachusetts has been published so many times in previous bulletins, that only the more important points will be referred to at this time.

All brands of fertilizers, whether single or compound, must be recorded and licensed annually on or before May 1, at the Massachusetts Experiment Station before they can be legally sold or offered for sale in this state. The fee charged by the state for a fertilizer license is \$5.00 for each of the so-called essential ingredients: nitrogen, phosphoric acid, and potassium oxide guaranteed in each and every distinct brand. A certified statement shall be furnished the director by each manufacturer giving the name of each brand offered for sale, the name of the manufacturer and location of the factory, as well as the guaranteed composition of each distinct brand. Manufacturers and importers may appoint any number of agents after having secured their license certificate from the director.

* Organic nitrogen tests were made by P. V. Goldsmith.

NOTE.—The writer wishes to give credit to Dr. J. B. Lindsey for many valuable suggestions relative to the subject matter of this publication.

Every lot or parcel of commercial fertilizer or fertilizer material shall bear a plainly printed statement giving the following information: number of net pounds of fertilizer in the package, name of brand under which the fertilizer is sold, name and address of the manufacturer or importer, location of factory and guaranteed composition of brand expressed as follows; percentage of nitrogen, of potash (K_2O) soluble in distilled water and of phosphoric acid (P_2O_5) in available form soluble in distilled water, and reverted as well as total. Inferior substances like leather, hair or wool waste in any form shall not be used unless so stated in a conspicuous manner in the guarantee.

Provision is made for the collection of samples of fertilizers and fertilizer materials found in the possession of any manufacturer, importer, agent or dealer. Two samples shall be drawn from at least 10% of the number of packages present and in the presence of parties in interest. One sample shall be retained by the inspector for analysis and the other left with the agent or party whose stock was sampled, the latter sample being for the protection of the manufacturer.

Offenders against the above regulations are subject to a fine. The full text of the fertilizer law will be furnished upon application.

Including the various branches of the American **Manufacturers and Licensed Brands.** Agricultural Chemical Co., seventy-six manufacturers, importers and dealers have secured licenses for the sale of four hundred and nine distinct brands of fertilizers and agricultural chemicals in Massachusetts during the season of 1908. The brands may be grouped as follows:

Complete Fertilizers,	306
Fertilizers furnishing Phosphoric Acid and Potash,	8
Ground Bone, Tankage and Dry Ground Fish,	40
Agricultural Chemicals,	55
Total	<hr/> 409

LIST OF LICENSEES AND BRANDS.

The names of the fertilizer manufacturers and importers legally selling fertilizers in the state follow, together with the names of the brands licensed by each.

The American Agricultural Chemical Co., 92 State St., Boston, Mass.

Special Grass and Garden Mixture,
Grass and Oats Fertilizer,
High Grade Fertilizer with 10% Potash,
Grass and Lawn Top Dressing,
Tobacco Starter and Grower,
High Grade Tobacco Manure,
Fine Ground Bone,
Dissolved Bone Black,
Muriate of Potash,
Double Manure Salts,
High Grade Sulphate of Potash,
Nitrate of Soda,
Dry Ground Fish,
Plain Superphosphate,
Sulphate of Ammonia,
Kainit,
Dried Blood,
Fine Ground Tankage,
Ground South Carolina Phosphate,
Baker's A. A. Ammoniated Super.,
Baker's Complete Potato Manure,
Bradley's Complete Manure Potatoes
and Vegetables,
Bradley's Complete Manure Corn and
Grain,
Bradley's Complete Manure with 10%
Potash,
Bradley's Complete Manure Top Dress-
ing Grass and Grain,
Bradley's X. L. Superphosphate,
Bradley's Potato Manure,
Bradley's Potato Fertilizer,
Bradley's Corn Phosphate,
Bradley's Seeding Down Manure,
Bradley's Eclipse Phosphate,
Bradley's Niagara Phosphate,
Bradley's English Lawn Fertilizer,
Bradley's Columbia Fish and Potash,
Bradley's Abattoir Bone Dust,
Church's Fish and Potash,
Bradley's Complete Manure for
Asparagus,
Clark's Cove Bay State Fertilizer,
Clark's Cove Bay State Fertilizer, G. G.,
Clark's Cove Great Planet Manure,

Clark's Cove Potato Manure,
Clark's Cove Potato Fertilizer,
Clark's Cove King Philip Guano,
Crocker's Corn Phosphate,
Crocker's Potato, Hop and Tobacco,
Crocker's A. A. Complete Manure,
Cumberland Superphosphate,
Cumberland Potato Fertilizer,
Darling's Blood, Bone and Potash,
Darling's Complete 10% Manure,
Darling's Potato Manure,
Darling's Farm Favorite,
Darling's Potato and Root Crop
Manure,
Darling's General Fertilizer,
Darling's Animal Fertilizer,
Darling's Dissolved Bone and Potash,
Great Eastern Northern Corn Special,
Great Eastern Veg., Vine and Tobacco,
Great Eastern Garden Special,
Great Eastern General,
Pacific High Grade General,
Pacific Potato Special,
Soluble Pacific Guano,
Pacific Nobsque Guano,
Packers' Union Gardeners' Comp. Man.
Packer's Union Animal Corn Fertilizer,
Packer's Union Universal Fertilizer,
Packer's Union Potato Manure,
Quinnipiac Market Garden Manure,
Quinnipiac Phosphate,
Quinnipiac Potato Manure,
Quinnipiac Potato Phosphate,
Quinnipiac Corn Manure,
Quinnipiac Climax Phosphate,
Quinnipiac Onion Manure,
Read's Practical Potato Special,
Read's Farmers' Friend,
Read's Standard,
Read's High Grade Farmers' Friend,
Read's Vegetable and Vine,
Standard Complete Manure,
Standard Fertilizer,
Standard Special for Potatoes,
Standard Guano,
Tucker's Original Bay State Bone
Superphosphate,
Tucker's Special Potato,
Wheeler's Corn Fertilizer,
Wheeler's Potato Manure,

Wheeler's Havana Tobacco Grower,
 Wheeler's Bermuda Onion Grower,
 Williams & Clark's High Grade Special,
 Williams & Clark's Americus Phosphate
 Williams and Clark's Potato Manure,
 Williams & Clark's Royal Bone Phosphate,
 Williams & Clark's Prolific Crop Producer,
 Williams & Clark's Potato Phosphate,
 Williams & Clark's Corn Phosphate.

W. H. Abbott, Holyoke, Mass.

Abbott's Animal Fertilizer,
 Abbott's Onion Fertilizer,
 Abbott's Eagle Brand,
 Abbott's Tobacco Fertilizer.

American Cotton Oil Co., 27 Beaver St., New York, N. Y.

Prime Cottonseed Meal,

American Linseed Co., 100 William St., New York, N. Y.

Linseed Meal.

Armour Fertilizer Works, 861 Calvert Building, Baltimore, Md.

Armour's Fruit and Root,
 Armour's Blood, Bone and Potash,
 Armour's High Grade Potato,
 Armour's All Soluble,
 Armour's Ammon. Bone with Potash,
 Armour's Bone Meal,
 Armour's Complete Potato,
 Armour's Corn King,
 Armour's Market Garden,
 Armour's Grain Grower,
 Armour's Star Phosphate,
 Armour's Fish and Potash,
 Armour's Onion Special,
 Nitrate of Soda,
 Muriate of Potash.

H. J. Baker & Bro., 100 William St., New York, N. Y.

Castor Pomace.

Beach Soap Co., Lawrence, Mass.

Beach's Advance Brand,
 Beach's Reliance Brand,
 Beach's Fertilizer Bone,
 Beach's Market Garden.

Berkshire Fertilizer Co., Bridgeport, Conn.

Berkshire Grass Special,
 Ammoniated Bone Phosphate,
 Potato and Vegetable Phosphate,
 Complete Fertilizer,
 Complete Tobacco Fertilizer.

Bonora Chemical Co., 488 Broadway, New York, N. Y.

Nature's Plant Food "Bonora".

Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.

Bowker's Tobacco Ash Elements,
 Bowker's Gloucester Fish and Potash,
 Bowker's Potash Bone,
 Bowker's Sure Crop Phosphate,
 Bowker's Potash or Staple Phosphate,
 Bowker's 10% Manure,
 Bowker's Bone and Potash, Square Brand,
 Bowker's Bone and Wood Ash Fertilizer,
 Bowker's Bristol Fish and Potash,
 Bowker's Clover Brand, Bone and Wood Ash Fertilizer,
 Bowker's Corn Phosphate
 Bowker's Farm and Garden Phosphate,
 Bowker's Potato and Veg. Phosphate,
 Bowker's Fresh Ground Bone,
 Bowker's Hill and Drill Phosphate,
 Bowker's Tobacco Starter,
 Bowker's Fish and Potash, Square Brand,
 Bowker's Fish and Potash, D Brand,
 Bowker's Corn, Grain and Grass Fertilizer,
 Bowker's Cranberry Phosphate,
 Bowker's High Grade Fertilizer,
 Bowker's Soluble Animal Fertilizer,
 Bowker's Potato and Vegetable Fert.,
 Bowker's Market Garden Fertilizer,
 Bowker's Lawn and Garden Dressing,
 Bowker's Complete Alkaline Tobacco Grower,
 Bowker's Early Potato Manure,
 Bowker's Blood, Bone and Potash,
 Bowker's Dissolved Bone,
 Bowker's Plain Superphosphate,
 Bowker's Nitrate of Soda,
 Bowker's Sulphate of Ammonia,
 Bowker's Dried Blood,
 Bowker's Tankage,
 Bowker's Muriate of Potash,

Bowker's Double Sulphate of Potash and Magnesia,
 Bowker's Fishermans' Brand Fish and Potash,
 Bowker's High Grade Sulphate of Potash,
 Bowker's Kainit,
 Bowker's Ammon. Food for Flowers,
 Bowker's Seeding Down Fertilizer,
 Bowker's Dissolved Bone Black,
 Bowker's Canada Hard Wood Ashes,
 Stockbridge's Tobacco Manure,
 Stockbridge's Special Complete for Quick Growth and Forcing,
 Stockbridge's Complete for Potatoes and Vegetables,
 Stockbridge's Special Complete for Corn and All Grain,
 Stockbridge's Special Complete for Seeding Down, etc.

**Joseph Breck & Sons, Corporation,
 51-52 North Market St., Boston,
 Mass.**

Breck's Lawn and Garden Dressing,
 Breck's Market Garden Manure,
 Breck's Ram's Head Brand, Pulverized Sheep Manure.

**T. W. Brode & Co., 40 So. Front St.,
 Memphis, Tenn.**

Owl Brand Cottonseed Meal.

**Buffalo Fertilizer Co., William St.,
 Buffalo, N. Y.**

Fish Guano,
 Farmers' Choice,
 Ideal Wheat and Corn,
 Celery and Potato Special,
 Vegetable and Potato,
 High Grade Manure,
 Top Dresser,
 Buffalo Bone Meal,
 High Grade Sulphate of Potash,
 Muriate of Potash.

T. H. Bunch Co., Little Rock, Ark.
 Cottonseed Meal.

**The Coe-Mortimer Co., 24-26 Stone
 St., New York, N. Y.**

E. Frank Coe's Columbian Corn and Potato Fertilizer,
 E. Frank Coe's Celebrated Special Potato Fertilizer,
 E. Frank Coe's Excelsior Potato Fert.,

E. Frank Coe's Gold Brand Excelsior Guano,
 E. Frank Coe's High Grade Ammoniated Bone Superphosphate,
 E. Frank Coe's New Englander Corn and Potato Fertilizer,
 E. Frank Coe's XXV Ammoniate Bone Phosphate,
 E. Frank Coe's Red Brand Excelsior Guano,
 Peruvian Vegetable Grower,
 Peruvian Market Gardeners' Fertilizer,
 Peruvian Grass Top Dressing,
 Peruvian Tobacco Fertilizer,
 Nitrate of Soda,
 Thomas Phosphate Powder, (Basic Slag Phosphate),
 Muriate of Potash,
 Genuine Peruvian Guano, Chincha Grade,
 Genuine Peruvian Guano, Lobos Grade,
 High Grade Sulphate of Potash.

**John C. Dow Co., 13-14 Chatham St.,
 Boston, Mass.**

Dow's Pure Bone.

**Eastern Chemical Co., 37 Pittsburg
 St., Boston, Mass.**

Imperial Plant Food.

Essex Fertilizer Co., Boston, Mass.

Essex Complete Manure for Corn, Grain and Grass,
 Essex Complete Manure for Potatoes, Roots and Vegetables,
 Essex Market Garden and Potato,
 Essex A. 1 Superphosphate.
 Essex XXX Fish and Potash,
 Essex Lawn Dressing,
 Essex Special Tobacco Manure,
 Essex Potato Grower,
 Essex Special Potato Phosphate.

**R. & J. Farquhar & Co., 6-7 South
 Market St., Boston, Mass.**

Farquhar's Vegetable and Potato Fert.,
 Thompson's Imp. Vine, Plant and Veg.,
 Farquhar's Lawn and Garden Dressing,
 Thompson's Special Chrysanthemum Manure,
 Farquhar's Pure Ground Bone,
 Clay's London Fertilizer.

Fertilizer Products Co., 76 Hudson St., Jersey City, N. J.

Plant Blood.

F. E. Fogg, Dartmouth, Mass.

Corn and Grass Fertilizer.

C. W. Hastings, Ashmont, Mass.

Ferti Flora.

Thomas Hersom & Co., New Bedford, Mass.

Bone Meal,

Meat and Bone.

The Home Soap Co., 103 Webster St., Worcester, Mass.

Ground Bone.

Humphreys Godwin Co., Memphis, Tenn.

Dixie Brand Cottonseed Meal.

Hunter Bros. Milling Co., St. Louis, Mo.

Prime Cottonseed Meal.

Storer F. Jones, 15 Garfield St., Watertown, Mass.

Canada Hard Wood Ashes.

John Joynt, Lucknow, Ontario, Can.

Canada Hard Wood Ashes.

Lister's Agricultural Chemical Works, Newark, N. J.

Lister's High Grade Special,

Lister's Success,

Lister's Special Corn,

Lister's Potato Manure,

Lister's Special Tobacco Fertilizer,

Lister's 10% Potato Grower,

Lister's Grass and Grain Fertilizer,

Lister's Special Potato Fertilizer.

James E. McGovern, Andover, Mass.

Animal Fertilizer,

George L. Monroe & Sons, Oswego, N. Y.

Pure Unleached Canada Wood Ashes.

D. M. Moulton, Monson, Mass.

Moulton's Ground Bone.

Mapes Formula and Peruvian Guano Co., 143 Liberty St., New York.

Potato Manure,

Tobacco Starter, Improved,

Tobacco Manure, Wrapper Brand,

Economical Potato Manure,

Average Soil Complete Manure,

Vegetable Manure or Complete Manure for Light Soils,

Corn Manure,

Complete Manure, "A" Brand,

Cereal Brand,

Cauliflower and Cabbage Manure,

Grass and Grain Spring Top Dressing,

Fruit and Vine Manure,

Complete Manure, 10% Potash,

Top-dresser, Improved, Half Strength,

Top-dresser, Improved, Full Strength,

Tobacco Ash Constituents,

Dissolved Bone,

Mapes Complete Manure for General Use,

Mapes Lawn Top Dressing.

National Fertilizer Co., Bridgeport, Conn.

Chittenden's Muriate of Potash,

Chittenden's Carbonate of Potash,

Chittenden's Dissolved Bone Black,

Chittenden's Nitrate of Soda,

Chittenden's Potato Phosphate,

Chittenden's Complete Root,

Chittenden's Fish and Potash,

Chittenden's Connecticut Valley Tobacco Starter,

Chittenden's Connecticut Valley Tobacco Grower,

Chittenden's Market Garden,

Chittenden's Tobacco Special with Carbonate of Potash,

Chittenden's Complete Tobacco,

Chittenden's High Grade Special Tobacco,

Chittenden's Ammoniated Bone,

Chittenden's Formula "A",

Chittenden's Fish and Potash "X"

Chittenden's Dry Ground Fish,

Chittenden's Fine Ground Bone,

Chittenden's Double Manure Salts,

Chittenden's High Grade Sulphate of Potash,

Chittenden's Complete Grass Fertilizer.

Natural Guano Co., Aurora, Ill.

Pulverized Sheep Manure.

**New England Fertilizer Co., 40 A
North Market St., Boston, Mass.**

New England Corn Phosphate,
New England Potato Fertilizer,
New England Superphosphate,
New England High Grade Potato
Fertilizer,
New England Corn and Grain Fertilizer.

**Northwestern Fertilizer Co., Detroit,
Mich.**

Northwestern Empire Special.

Olds & Whipple, Hartford, Conn.

O. & W. Home Mixture for Onions,
O. & W. Corn and Potato Fertilizer,
O. & W. Complete Tobacco Fertilizer,
O. & W. Vegetable Potash,
O. & W. Dry Ground Fish,
O. & W. Top Dressing for Grass.
O. & W. High Grade Potato,
O. & W. Fish and Potash,
O. & W. Grey Pomace.

**Parmenter & Polsey Fertilizer Co.,
Boston, Mass.**

P. & P. Potato Fertilizer,
Plymouth Rock Brand,
Special Potato Fertilizer,
Pure Ground Bone,
A. A. Brand.

R. T. Prentiss, Holyoke, Mass.

Complete for Corn,
Complete for Potatoes,
Complete for Top Dressing.

**The Pulverized Manure Co., Union
Stock Yards, Chicago, Ill.**

Wizard Brand Manure.

W. W. Rawson & Co., Boston, Mass.

Rawson's Special Lawn and Garden
Dressing,
Rawson's Lawn and Garden Dressing,
Rawson's Fine Ground Bone,
Rawson's Wizard Brand Pulverized
Sheep Manure.

**Ross Bros., 88-92 Front St., Wor-
cester, Mass.**

Ross Bros. Odorless Lawn and Garden
Fertilizer.

**N. Roy & Son, South Attleboro,
Mass.**

Complete Animal Fertilizer.

**Rogers & Hubbard Co., Middletown,
Conn.**

Hubbard's Complete Phosphate,
Hubbard's Grass and Grain Fertilizer,
Hubbard's Oats and Top Dressing,
Hubbard's Potato Phosphate,
Hubbard's Soluble Corn and General
Crops,
Hubbard's Soluble Potato Manure,
Hubbard's Pure Raw Knuckle Bone
Flour,
Hubbard's Soluble Tobacco Manure,
Hubbard's Strictly Pure Fine Bone.

**The Rogers Manufacturing Co.,
Rockfall, Conn.**

All Round Fertilizer,
High Grade Corn and Onion,
Complete Potato and Vegetable,
Fish and Potash,
High Grade Tobacco and Potato,
High Grade Oats and Top Dressing,
High Grade Grass and Grain,
High Grade Soluble Tobacco,
Pure Knuckle Bone,
Pure Fine Bone.

**Sanderson Fertilizer and Chemical
Co., P. O. Box 172, New Haven,
Conn.**

Sanderson's Special with 10% Potash,
Sanderson's Corn Superphosphate,
Sanderson's Old Reliable,
Sanderson's Formula "A,"
Sanderson's Formula "B,"
Sanderson's Top Dressing,
Sanderson's Potato Manure,
Walker's Complete Phosphate,
Atlantic Coast Bone, Fish and Potash,
Fine Ground Fish,
Nitrate of Soda,
Sulphate of Potash,
Muriate of Potash,
Plain Superphosphate.

**M. L. Shoemaker & Co., Limited,
Philadelphia, Pa.**

"Swift Sure" Superphosphate General
Use,
"Swift Sure" Bone Meal,
"Swift Sure" Guano for Truck, Corn
and Onions.

**Smith Agricultural Chemical Co.,
Columbus, O.**

Abbott's Tobacco and Potato Special,
Abbott's Truck Guano,
Abbott's German Potash Mixture,
Abbott's Harvest King,
Hardy's Potato Grower,
Hardy's Potato and Tobacco Special,
Hardy's Tankage, Bone and Potash.

**Springfield Rendering Co., Springfield,
Mass.**

Tankage,
Ground Bone.

Thomas L. Stetson, Randolph, Mass.
Stetson's Ground Bone.

**F. C. Sturtevant, 216 State St.,
Hartford, Conn.**

Granulated Tobacco and Sulphur.

**Swift's Lowell Fertilizer Co., 40
North Market St., Boston, Mass.**

Swift's Lowell Bone Fertilizer,
Swift's Lowell Potato Phosphate,
Swift's Lowell Animal Brand,
Swift's Lowell Market Garden Manure,
Swift's Lowell Potato Manure,
Swift's Superior Fertilizer,
Swift's Lowell Lawn Dressing,
Swift's Lowell Ground Bone,
Swift's Special Vegetable Manure,
Acid Phosphate,
Nitrate of Soda,
Muriate of Potash,
Ground Tankage,
Dried Blood,
High Grade Sulphate of Potash,
Special Grass Fertilizer,
Potato Grower,
Empress Brand for Corn and Potatoes.

Tavender Process Co., Boston, Mass.
Am-Pho-Nite.

A. L. Warren, Northboro, Mass.
Warren's Ground Bone.

**Whitman & Pratt Rendering Co.,
Lowell, Mass.**

Potash Special,
Potato Plowman,
Corn Success,
Vegetable Grower,
All Crop,
Ground Bone.

Sanford Winter, Brockton, Mass.
Winter's Ground Bone.

**Wilcox Fertilizer Works, Mystic,
Conn.**

Wilcox Potato, Onion and Vegetable
Manure,
Wilcox Potato Fertilizer,
Wilcox Complete Bone Superphosphate,
Wilcox Fish and Potash,
Wilcox High Grade Tobacco Special,
Wilcox Dry Ground Fish,
Wilcox Nitrate of Soda,
Wilcox Muriate of Potash,
Wilcox Grass Fertilizer.

**A. H. Wood & Co., Framingham,
Mass.**

B. B. Brand General Fertilizer.

**J. M. Woodard & Bro., Greenfield,
Mass.**

Woodard's Unground Tankage.

**The Worcester Rendering Co.,
Auburn, Mass.**

Ground Tankage.

**Wunsch Manufacturing Co., Paw-
tucket, R. I.**

New England Standard,
Superior Brand,
Potato Special.

The samples represented in the following tables of
Collection of analyses, unless otherwise specified, were taken by the
Samples. authorized sampling agent of the experiment station,
Mr. W. K. Hepburn, who during the months of April,
May and June, drew 624 samples from dealers' stocks, representing
400 distinct brands. Some of these brands were taken from stock in
the possession of farmers who had purchased the goods for their

own use. Many of these, therefore, will not appear among the licensed goods but have been listed as farmers' samples. All samples have been taken strictly in accordance with our fertilizer law requirements. Whenever possible the same brand has been taken in various parts of the state and a composite sample, composed of equal weights of the various samples, has been used for analysis. It is believed that this gives a better representation of the brands than can the analysis of one sample.

An effort is made to sample every brand licensed. During the season samples were taken from about 180 agents. The towns visited by our collector vary somewhat from those of the previous season—they comprise about 90 in number and represent every county in the state. Ninety-six more samples have been collected and analyzed than during the preceding year. At our request representative samples were sometimes forwarded of those brands not found in our general markets. Such samples are designated in the tables of analyses as manufacturers' samples.

All commercial fertilizers are bought for the purpose of supplying nitrogen, potash, phosphoric acid and sometimes lime, to growing plants in suitable and available forms; the other eight elements, hydrogen, oxygen, carbon, iron, magnesium, sulphur, chlorine, and calcium or lime, usually regarded as being essential to the proper growth and production of plants, are in most cases abundantly supplied either from the air or soil. It was formerly believed by investigators that sodium, silica, and manganese which are usually found in the plant ash, were essential to the proper growth of plants; more recent investigations, however, have disproved this fact. The commercial as well as the agricultural value of a fertilizer, therefore, depends primarily upon the quantity as well as the quality of the three essential elements of plant food which it contains.

In considering briefly the various forms and functions of **Nitrogen**, the first three elements mentioned, we find that nitrogen in its natural state is a gas, and that it comprises about four-fifths of our atmosphere. There is only one class of agricultural plants, however, which has the power of acquiring free atmospheric nitrogen, namely legumes such as clover, alfalfa, peas, beans, etc.; they do this by means of nodules which develop on

their roots, and which contain micro-organisms. All other plants take their nitrogen from the soil and in combination with other elements.

Nitrogen is taken up by plants largely in the form of nitrates and in this form is the most active as well as the most elusive of the elements of plant food. When organic nitrogenous substances decay in the soil, the nitrogen which they contain is readily converted into ammoniates and then into nitrites and finally into nitrates which, if not taken up by the growing plant, pass away into solution and are lost in the drainage waters. These facts emphasize the importance of a familiarity with the behavior and functions of the various elements of plant food in order that they may be better controlled and husbanded, and grave losses thereby avoided.

Nitrogen in the form of ammoniates and organic matter is not as readily leached out of the soil as are nitrates. In many cases, frequent and small applications of nitrogen in form of nitrates is likely, therefore, to prove more economical and effective, especially in wet seasons, than a large application at one time. In case of mixed fertilizers, too much of the nitrogen should not be present as nitrate; usually a quarter to a third is a fair proportion. Nitrogen is a powerful stimulant and when used in great excess, especially in the absence of a liberal supply of available potash and phosphoric acid, causes an unnatural watery growth, a large development of stem and leaf, with but little fruit.

Nitrogen is the most expensive element of plant food, costing at retail from 18 to 25 cents per pound, while potash and available phosphoric acid may be purchased for $4\frac{1}{2}$ to $5\frac{1}{2}$ cents. Nitrogen occurs in fertilizers in three forms, as nitrates, ammoniates and organic nitrogen.

Nitrogen in form of nitrates is supplied by nitrate of soda, the average commercial product testing 95% nitrate of soda, equivalent to about 15.5 per cent nitrogen. Nitric nitrogen may also be supplied from nitrate of potash or saltpetre which, of course, furnishes valuable potash as well as nitrogen. Two analyses of nitrate of potash from samples collected in our general markets, averaged 12.47% nitrogen and 46.22% potash.

Nitrogen as furnished by sulphate of ammonia, is one of the most active forms of nitrogen except when used on soils deficient in lime.

Analyses of 23 samples made at this station give an average of 20.70% nitrogen.

Organic nitrogen is derived from both animal and vegetable substances. Blood, fish and tankage are easily decomposed in the soil and are considered among the best and most available of the organic nitrogen containing substances of animal origin. Of the vegetable sources of nitrogen, cottonseed meal, castor pomace, and linseed meal are among the best and most available. The following table gives a list of animal and vegetable substances with the average composition of each. In one column of the table will be found the comparative availability by the so-called alkaline permanganate method, of the various organic substances furnishing nitrogen.

	Number of Analyses.	NITROGEN.				Phosphoric Acid.	Potassium Oxide.
		Lowest.	Highest.	Average.	Comparative Availability.		
Animal Ammoniates.							
Dried blood	34	7.99	13.55	10.16	65.7	—	—
Tankage	76	4.11	11.27	5.88	61.0	14.00	—
Dry ground fish	60	6.06	10.48	8.36	64.2	8.87	—
Ground bone	253	.85	5.94	3.06	66.4	24.34	—
Hoof meal.....	1	—	—	14.15	65.8	—	—
Horn shavings.....	1	—	—	14.39	64.6	—	—
Hair	1	—	—	9.82	57.3	—	—
Wool waste	13	.39	8.30	3.05	41.0	.56	1.68
Garbage tankage.....	1	—	—	5.95	23.6	6.06	—
Philadelphia tankage..	1	—	—	7.07	29.7	—	—
Ground leather.....	1	—	—	7.51	32.6	—	—
Vegetable Ammoniates.							
Cottonseed meal	127	3.24	7.99	6.74	46.3	2.56	1.64
Linseed meal	7	5.26	6.42	5.78	45.2	1.47	1.52
Castor pomace.....	6	4.68	5.85	5.18	55.9	2.12	1.20
Muck or peat	1	—	—	1.57	21.4	—	—

The above figures, representing availability, were taken from the 14th Annual Report of the Vermont Agricultural Experiment Station.

The above method is not suited for the determination of nitrogen availability in vegetable substances such as cottonseed meal, linseed meal and castor pomace. Actual experiments have demonstrated that the nitrogen they contain is fully as available as that in the high grade animal substances. The low availability of the nitrogen,

indicated by this method, in vegetable matters is supposed to be due to the large amount of non-nitrogenous matter found in this class of products. The low availability of the nitrogen in hair, wool waste, garbage tankage, ground leather, and Philadelphia tankage, marks these materials as rather inactive sources of plant food.

This element is never found, in nature unassociated with other elements. The term *potash* used in connection with fertilizers is known to chemists as potassium oxide (K_2O), a compound of potassium and oxygen. The potassium in all potash salts is equivalent chemically to a certain amount of potash (potassium oxide), and through custom and for the sake of comparison is usually guaranteed and reported as such. Potassium is found in a great variety of minerals which, by slow decomposition furnish potash gradually to growing plants. Potash tends to accumulate in the leaves and stems of plants and if these are returned to the soil in the form of manure, the soil is kept better supplied with this valuable constituent. Potash is not as readily lost by leaching as is nitrogen; on the other hand it is more easily diffused and much more apt to pass beyond the downward limit of the roots of some plants than is phosphoric acid. The writer has found by actual analysis in a number of instances in the case of tobacco soils, as high as 500 lbs. of water soluble potash in one acre of soil eight inches deep, and in only one or two instances has he ever found more than traces of water soluble phosphoric acid. Potash has also been found in soil drainage waters collected several feet under the surface of the soil.

Soils vary in their power to retain potash. Sandy soils are much less retentive of potash than clay soils, although sandy soils become more retentive in proportion as their content of humus is increased. The various potash compounds are peculiarly adapted for the production of a superior quality of certain farm crops. For instance, carbonate of potash and sulphate of potash are particularly useful in growing a superior quality of tobacco; the latter salt is especially favorable to the production of sugar and starch in such crops as fruit, potatoes, sugar beets and legumes; while the muriate or chloride is valuable as a source of potash for grass and farm forage crops.

The following table gives a list of the principal potash fertilizers together with the average per cent of potash furnished by each.

	No. of Analyses.	Percent of Potash.		
		Minimum.	Maximum.	Average.
High grade sulphate of potash....	48	45.70	53.15	49.25
Carbonate of potash	6	55.68	67.20	60.92
Muriate of potash	70	45.40	54.80	49.89
Sulphate of potash-magnesia*	24	19.55	31.68	25.32
Kainit.....	9	10.90	13.65	12.47
Silicate of potash	4	21.48	27.62	24.55
Carnalite	1	—	—	13.68

NOTE. Taken from 1906 Annual Report of Massachusetts Experiment Station.

The low grade potash fertilizers, kainit, sylvanite, carnalite, and silicate of potash, contain a large bulk of material of little or no value in connection with their relatively small percentage of potash. They naturally furnish a favorite source of potash for low grade fertilizers.

This element, like potassium, is never found in the free state in nature but is associated with other elements, largely lime, iron and alumina, and usually in a more or less unavailable form. There is little danger of this element being lost by leaching.

Phosphoric acid is a term applied to a compound of phosphorous and oxygen, expressed chemically as anhydrous (water free) phosphoric acid (P_2O_5). Phosphoric acid is found in larger quantities in grain and seeds than in the leaves and stems of plants. The soil is therefore exhausted of this element most rapidly by a continued system of grain cropping, especially if the grain is sold from the farm.

The common sources of phosphoric acid, from a commercial standpoint, are phosphate rock, bones, basic slag and guano. Phosphoric acid may be combined with lime in three different forms: (1) as tri-calcic phosphate, commercially known as insoluble phosphoric acid or bone phosphate of lime, (2) di-calcic phosphate or reverted phosphoric acid and (3) mono-calcic phosphate or soluble phosphoric acid.

Insoluble phosphoric acid. This term is applied to a compound consisting of three parts of lime to one part of phosphoric acid; in this form it is not readily available to plants. South Carolina,

* Known frequently as low-grade sulphate of potash.

Florida and Tennessee rock and bone are the common sources of supply; they contain from 60 to 80 per cent of tri-calcic phosphate and when untreated are not ordinarily used for fertilizer because of their insolubility. When treated with sulphuric acid, however, they furnish the soluble and available phosphoric acid usually found in commercial fertilizers.

Soluble phosphoric acid. Mono-calcic or one-lime phosphate is a product resulting from treating the insoluble phosphates with oil of vitriol or sulphuric acid. In the process the sulphuric acid combines with two parts of lime forming gypsum or sulphate of lime, and a compound results having one lime, two water and one phosphoric acid. This form of phosphoric acid is easily soluble in water.

In the treatment of a phosphate with oil of vitriol, it is not economy to add sufficient acid to act upon all of the insoluble phosphate; the insoluble phosphate remaining will be acted upon, more or less, by the soluble phosphoric acid produced and *reverted* (di-calcic) or two-lime phosphate will result. This compound is not soluble in water but is gradually dissolved by soil water and thus becomes available to plants.

The term "*available phosphoric acid*" is the sum of the water soluble and reverted phosphoric acid and designates that portion of the total phosphoric acid which laboratory methods show as being soluble in water and neutral citrate of ammonia of a certain strength. Soluble phosphoric acid is considered to have the same value whether its source is from acid phosphate, dissolved bone black, or dissolved bone; the same may be said of reverted phosphoric acid. The following table gives a list of the more common sources of phosphoric acid with their average composition.

	No. of Analyses.	Phosphoric Acid.		Nitrogen.
		Total.	Available.	
Tennessee phosphate,.....	1	33.00	—	—
So. Carolina rock phosphate,....	5	28.06	—	—
Florida phosphate,.....	2	36.72	—	—
Bone ash,	1	39.14	—	—
Bone meal,*.....	253	24.34	—	3.06
Dissolved bone,	9	16.42	12.40	2.14
Dissolved bone black,.....	38	17.56	16.38	—
Acid phosphate,†	44	15.75	13.40	—
Basic slag,	9	17.73	15.48‡	—

*Analyses variable. Steamed bone ordinarily contains less nitrogen and more phosphoric acid than raw bone meal.

†Two grades are offered, the low grades vary from 12 to 15 per cent and the better grades from 15 to 19 per cent phosphoric acid.

‡By Wagner's method.

There are other substances furnishing phosphoric acid in varying quantities such as tankage, fish, guanos, etc., but these are usually bought for their nitrogen content. The phosphoric acid which they contain, however, is more available, when used in the unacidified condition, than is the phosphoric acid from the natural or mineral phosphates. This is due to the fact that more or less organic matter is associated with the bone and as this decomposes in the soil the bone gradually yields its phosphoric acid. Probably from three to five years are required for all of it to become active, depending to a great extent upon the fineness with which it is ground,

Owing to numerous inquiries regarding basic slag and to the fact that it is a comparatively new product in our local markets, the following brief statement is submitted.

Phosphatic or Thomas slag is a by-product in the modern method of steel manufacture from ores containing noticeable quantities of phosphorus. The process of removing the phosphorus from the ore, briefly stated, consists in adding to the so-called converter containing the milled ore, a definite amount of freshly burned lime which, after a powerful reaction, is found to be united with the phosphorus and swims upon the surface of the molten steel in the form of a slag. At the present time, according to Wagner, practically all of the iron works treat the molten slag as it flows from the converter with hot quartz sand, with the result that the availability of the phosphoric acid is increased from 10 to 30 percent.¹

The principal constituents of the slag are phosphoric acid, lime, iron oxides and silicic acid. It is placed upon the market in the form of a dark brown powder. Its phosphoric acid was formerly supposed to exist in the form of tetra-calcium phosphate, but the opinion is now generally held, especially by Wagner, that the phosphoric acid is combined in the slag as a double salt of calcium phosphate and calcium silicate, and that in this form the roots are able to utilize it.

The slag has been found to work especially well upon sour marsh and meadow lands, upon porous, well-aired soils rich in humus, as well as upon sandy soils deficient in lime. The usual amount per acre is from 300 to 1000 pounds.

¹ Düngungsfragen, Heft I, p. 16 von P. Wagner 1896; also Anwendung Kuntsliche Dunge-mittel, vierte Auflage von Wagner, p. 74-75.

In determining the availability of the phosphoric acid in the slag this station employs the Wagner method.² The average per cent of total phosphoric acid in the four samples examined was 17.71 of which 15.48 per cent or 87.4 per cent of the whole was available, showing them to be of excellent quality. The commercial value of a pound of the available phosphoric acid has been placed at four cents.

The trade values of fertilizing ingredients in raw Schedule of materials and chemicals for the season of 1908 Trade Values. remain the same as for the previous year. They represent the average pound cost at retail of the various forms of nitrogen, phosphoric acid and potash furnished in unmixed raw materials and chemicals in the New England and Middle States, during the six months preceding March 1, 1908. They are the values agreed upon by representatives of the experiment stations in New England and the Middle States after a careful study of prevailing prices in the large cities in these localities.

TRADE VALUES OF FERTILIZING INGREDIENTS IN RAW MATERIALS AND CHEMICALS FOR 1908.

Nitrogen.

	Cents per pound.
Nitrogen in ammonia salts,	17 ½
“ “ nitrates,	18 ½
Organic nitrogen in dry and fine ground fish, meat, blood,	
and in high grade mixed fertilizers,	20 ½
“ “ “ fine* bone and tankage,	20 ½
“ “ “ coarse* bone and tankage,	15

Phosphoric Acid.

Phosphoric acid soluble in water,	5
“ “ “ in ammonium citrate, (reverted phosphoric acid),	4 ½
“ “ in fine* ground bone and tankage,	4
“ “ in coarse* bone and tankage,	3
“ “ in cottonseed meal, linseed meal, castor pomace and ashes,	4
“ “ insoluble (in neutral citrate of ammonia solution) in mixed fertilizers,	2

Potash.

Potash as sulphate, free from chlorides,	5
“ “ muriate (chloride),	4 ¼
“ “ carbonate,	8

*Fine and medium bone and tankage are separated by a sieve having circular openings 1.50 of an inch in diameter; valuations of these materials are based upon degree of fineness as well as composition.

² See Koenigs Untersuchung landwirtschaftliche und gewerbliche wichtiger Stoffe, Dritte Auflage, p. 173-174.

The valuations as published in our tables mean the **Commercial** comparative cash cost of an amount of nitrogen, phosphoric acid, and potash in *unmixed standard chemicals* **Valuation of** *and raw materials of good quality*, corresponding with **Fertilizers.** the same amount found in a ton of the fertilizer in question. The water soluble nitrogen has been valued at 18½ cents per pound; the organic nitrogen, assumed in all cases as coming from the highest grade of raw materials, has been valued at 20½ cents per pound—this is manifestly unfair in instances where low grade sources of organic nitrogen are used, and gives such fertilizers too high a value. It certainly creates an unfair competition between the manufacturer who used only high grade materials and the one who used the cheaper or low grade substances in his mixed product. There is great need of some recognized official method of determining the availability of the organic nitrogen in mixed commercial fertilizers. Much good work has been accomplished along this line by Jenkins¹ and also by Jones², although the methods as outlined have not yet been adopted as official by the Association of Official Agricultural Chemists. It is the intention of this station to give this matter further consideration.

Soluble phosphoric acid has been valued at 5 cents, reverted at 4½ cents and insoluble at 2 cents per pound. Phosphoric acid in fine bone and tankage has been valued at 4 cents, and in coarse bone and tankage at 3 cents per pound. The phosphoric acid in basic slag has been valued according to its content of available phosphoric acid as shown by Wagner's method, the available phosphoric acid being valued at 4 cents and the insoluble at 2 cents per pound.

In the table of analyses, whenever the potash is reported without foot-note or comment, it may be understood that sufficient chlorine was found present to unite with all of the potash. In cases where part of the potash is found present as sulphate or carbonate, and the analysis indicates the presence of chlorine, the potash equivalent of the chlorine is first calculated and the remainder is counted as sulphate or carbonate as the case may be.

The presence of chlorine or sulphates in a fertilizer advertised to contain its potash in form of carbonate is manifestly just as objectionable as though they were in actual combination with the potash. Total potash has been reported in form of a foot-note in instances where it is evident that organic vegetable substances have been used in the fertilizer. No attempt has been made to value that part of the potash which is insoluble in water.

¹ Connecticut State Exp. Sta. Repts. 1893, 1894-1896.

² Vermont Exp. Sta. Repts. 1898, 1899, 1901.

The valuations as published in our tables of analyses *are no indication of the agricultural value of a fertilizer* which is measured only by the value of the increased yield of crop due to the use of any particular brand of goods.

The retail cash prices in this year's bulletin have been obtained with the same care and along the same lines as for the previous year. Whenever possible the prices obtained by our collector are verified in writing at the time the analyses are reported to the agents. All cases of wide discrepancies in cash prices on the same fertilizer are taken up individually with the agent; the prices published, therefore, are quite representative. The percentage excess of the average retail cash price per ton over the calculated or commercial value of a fertilizer is the *percentage of difference*. Those fertilizers having the smallest percentage of difference will furnish the greatest amount of plant food for the least money.

The average retail cash price per ton of the 318 samples of complete fertilizers analyzed during the season of 1908 is \$36.20; the average commercial value is \$25.81; and the percentage of difference is 40.25. This, commonly called "overhead charges," represents the cost in storing, grinding, mixing, bagging, hauling and freighting the goods, as well as commissions to agents, long credits, depreciation of factory plant and profits. It is not surprising, therefore, that the valuations fall so far below the retail cash prices. A comparison of the above figures with those of the previous year show that the average cost of a ton of complete commercial fertilizer is 80 cents higher than for the season of 1907, while on the other hand the average comparative commercial value is \$1.62 more per ton. This would indicate that the consumer of commercial fertilizers has received slightly better value for his money the present season.

It would appear that it costs the average manufacturer some 40 per cent over the retail cost of the raw materials to manufacture them into mixed fertilizers and place them upon the market at a profit under existing methods of doing the business. If only a few staple brands of high grade mixtures were made and sold to consumers through their selected representatives, considerable of this excess cost would be avoided and the farmer correspondingly benefited. This matter is worthy of the attention of farmers' organizations.

Selection and Purchase of Fertilizers. Out of the three hundred odd brands of ready mixed fertilizers that are annually sold in Massachusetts, it is no easy matter for a farmer to make a judicious selection. A few suggestions at this time, therefore,

may not be out of place. It is poor judgment to buy a fertilizer because it costs but little per ton unless it contains a fair value of plant food. The higher the grade and more concentrated the fertilizer, the cheaper will be the plant food it contains, also the less bulk and weight to handle, thus reducing freight charges. The low grade fertilizer is the most expensive one to buy as a general thing. Examples of the purchase of a low and high grade fertilizer will illustrate these points.

Supposing a ton of low grade fertilizer is bought for \$25.00, analyzing 1 per cent nitrogen, 8 per cent phosphoric acid, and 3 per cent potash; and a ton of high grade goods is bought for \$40.00, analyzing $3\frac{1}{2}$ per cent nitrogen, 8 per cent phosphoric acid and 10 per cent potash. It will be seen that the high grade fertilizer contains the same amount of phosphoric acid *but over three times as much nitrogen and potash as does the low grade*; it might be reasonably expected therefore, to sell for nearly three times as much but in reality it sells for less than once and three-quarters of what is paid for the low grade article. When, therefore, a ton of the low grade goods costs \$25.00, one-third of a ton of high grade would furnish about the same amount of plant food and at a cost of \$13.33 thereby saving \$11.67. On the basis of ten tons of the \$25.00 goods, costing \$250.00, the same results could be obtained by the use of \$133.00 worth of the high grade fertilizer and a saving of \$116.00 would result.

The above certainly furnishes a strong argument in favor of purchasing the better grades of ready mixed fertilizers. There is also another advantage to be considered, namely, the *quality* of the plant food furnished by the two grades. High grade goods must be made from high grade materials as the following illustrations will show.

150 lbs.	Nitrate of Soda,
450 "	Dried Blood,
1000 "	Acid Phosphate,
400 "	High Grade Sulphate of Potash.

2000 lbs.

A ton of the above fertilizer furnishes 3.6 per cent nitrogen, 8 per cent available phosphoric acid, and 10 per cent potash, and allows

no chance for the addition of filler or make-weight material. In case of the low grade fertilizer the 1 per cent nitrogen, 8 per cent available phosphoric acid, and 3 per cent potash may be furnished by

50	lbs.	Nitrate of Soda,
113	"	Dried Blood,
1000	"	Acid Phosphate,
120	"	High Grade Sulphate of Potash.
<hr/>		
1283	lbs.	

This combination contains 1283 lbs. of fertilizing material and the balance of 717 lbs. to make the ton must be supplied by a filler which may have no more value than so much sand, on which the consumer must pay freight charges. He must also handle just so much more weight if he buys the low grade goods.

In case no inert substance is used as a filler in the low grade fertilizers the manufacturer has recourse to those forms of plant food having a low analysis and an inferior availability. Of course it is most desirable that the low grade fertilizing substances should be used in the manufacture of fertilizers; they all have a value and much credit is due the manufacturer for developing processes for the utilization of this class of materials. The point which the writer would make is the inconsistency of charging a higher cost per unit for the plant food in these fertilizers than what is charged in case of goods made from the highest grade of raw materials and chemicals.

The consumer should purchase and use high grade goods, therefore, if ready mixed fertilizers are to be selected. There is yet no general agreement among manufacturers as to the proper proportions and amounts of plant food elements in fertilizers for special crops, as is shown by the wide variation in the goods offered by different dealers for one and the same purpose. There probably never will be such agreement, for conditions differ; each farmer therefore must study to learn what seems best to meet his individual requirements. All other considerations having received due attention, a fertilizer should be selected which will give the largest amount of plant food in a suitable and available form for the least money.

The following tables have been prepared from the results of this year's inspection to show some comparisons between the various grades of fertilizers. All brands having a comparative commercial value of \$18.00 or less per ton have been classed as low grade;

those having a value of \$18.00-\$24.00 per ton as medium grade ; and those over \$24.00 per ton as high grade fertilizers.

GRADE	Number of Brands.	Per Cent of Whole.	Average Composition				Average Valuation.	Average Cost.	Excess of Selling Price over Valuation.	Percentage Difference.
			Per Cent Nitrogen.	Per Cent Available Phosphoric Acid.	Per Cent Potash.	Lbs. Available Plant Food in 100 lbs. Fertilizer.				
Low Grade,	26	9.22	1.74	6.90	2.22	10.86	16.06	28.48	12.42	77.33
Medium Grade,	105	37.23	2.42	8.02	3.73	14.17	20.93	31.13	10.20	49.16
High Grade,	151	53.55	4.06	7.65	7.44	19.15	30.51	40.96	10.45	34.25

A study of the above table shows a decided increase in the percentage of nitrogen and potash in the high grade and medium grade fertilizers while the phosphoric acid remains more constant in all three grades.

With less than a 44 per cent advance in price over the low grade fertilizer, the high grade furnishes more than 75 per cent increase in available plant food. The high grade fertilizer also furnishes nearly 90 per cent increase in commercial value. A ton of the average high grade fertilizer furnishes about 46 pounds more of nitrogen, 15 more of available phosphoric acid and 104 more of potash than does a ton of the low grade goods. The high grade fertilizers with a 31.6 per cent advance in price over the medium grade furnish 35 per cent more plant food with about 46 per cent increase in commercial value. The medium grade fertilizers cost only 9 per cent more than the low grade fertilizers and furnish 30.5 per cent greater commercial value.

It is very gratifying to note the small number of low grade fertilizers that is being sold in Massachusetts—only 26 out of a total of 282 or only 9.22 per cent.

Table showing the pound cost of the various elements of plant food in the three grades of fertilizer.

	Low Grade Fertilizer.	Medium Grade Fertilizer.	High Grade Fertilizer.
Nitrogen,	36.35 cts.	30.58 cts.	27.52 cts.
Soluble phosphoric acid,	8.86 cts.	7.46 cts.	6.71 cts.
Reverted " "	7.98 cts.	6.71 cts.	6.04 cts.
Insoluble. " "	3.55 cts.	2.98 cts.	2.69 cts.
Potash,	8.86 cts.	7.46 cts.	6.71 cts.

It is apparent from the above table that the consumer purchasing the low grade fertilizers has paid on the average 8.83 cents per

pound more for nitrogen, over 2 cents per pound more for available phosphoric acid and 2.15 cents per pound more for potash than has the user of the high grade fertilizers. The purchaser of the medium grade goods has paid on the average 3 cents per pound more for his nitrogen and $\frac{3}{4}$ of a cent per pound more for his available phosphoric acid and potash than has the purchaser of the high grade goods.

COMPLETE FERTILIZERS—SUMMARY OF RESULTS OF INSPECTION.

MANUFACTURER.	No. Brands Analyzed.	No. with all three elements equal to guarantee.	No. equal to guarantee in commercial value.	Percent of brands not showing a commercial shortage.	No. with one element below guarantee.	No. with two elements below guarantee.	No. with three elements below guarantee.
W. H. Abbott	2	1	2	100.	1	—	—
American Agricultural Chemical Co...	76	51	75	98.68	22	2	1
Armour Fertilizer Works.....	10	7	10	100.	3	—	—
Beach Soap Company.....	3	3	3	100.	—	—	—
Berkshire Fertilizer Company.....	5	3	5	100.	2	—	—
Bonora Chemical Company.....	1	1	1	100.	—	—	—
Bowker Fertilizer Company.....	29	17	27	93.10	10	2	—
Joseph Breck & Sons.....	3	2	2	66.66	1	—	—
Buffalo Fertilizer Company.....	7	3	6	85.71	4	—	—
Coe-Mortimer Company.....	8	5	8	100.	2	1	—
Eastern Chemical Company.....	1	1	1	100.	—	—	—
Essex Fertilizer Company.....	8	3	8	100.	5	—	—
R. & J. Farquhar & Co.....	5	2	5	100.	3	—	—
Fertilizer Products Company*.....	1	1	1	100.	—	—	—
C. W. Hastings.....	1	0	1	100.	1	—	—
Lister's Agricultural Chemical Works	7	4	6	85.71	2	1	—
J. E. McGovern.....	1	1	1	100.	—	—	—
Mapes' Formula & Peruvian Guano Co.	17	10	14	82.35	7	—	—
National Fertilizer Company.....	13	11	13	100.	2	—	—
Natural Guano Company.....	1	0	0	0.	1	—	—
New England Fertilizer Company....	6	5	5	83.33	1	—	—
Northwestern Fertilizing Company....	1	0	1	100.	1	—	—
Olds & Whipple.....	6	3	6	100.	2	1	—
Parmenter & Polsey.....	4	2	2	50.	1	1	—
R. T. Prentiss.....	3	1	3	100.	2	—	—
Pulverized Manure Company.....	1	1	1	100.	—	—	—
W. W. Rawson & Co.....	3	1	3	100.	2	—	—
Roger's Manufacturing Company.....	8	2	8	100.	6	—	—
Roger's & Hubbard Co.....	7	6	7	100.	1	—	—
Ross Brothers Company.....	1	0	0	0.	1	—	—
N. Roy & Son.....	1	0	0	0.	—	1	—
Sanderson Fertilizer & Chemical Co...	8	5	6	75.	1	1	1
M. L. Shoemaker & Co., L't'd	2	2	2	100.	—	—	—
Smith Agricultural Chemical Company	7	5	7	100.	2	—	—
Swift's Lowell Fertilizer Company....	12	5	12	100.	7	—	—
Whitman & Pratt Rendering Co.....	4	3	4	100.	1	—	—
Wilcox Fertilizer Works.....	5	4	5	100.	1	—	—
A. H. Wood & Co.....	1	1	1	100.	—	—	—
Wunsch Manufacturing Company.....	3	2	3	100.	1	—	—

* Ellis Chalmers Co. (Successors).

Summaries. A study of the table showing a summary of results of inspection of complete fertilizers reveals the fact that out of the 282 distinct brands analyzed, 110 or about 39 per cent of the whole number fell below the manufacturer's guarantee in one or more elements. Ninety-eight brands were deficient in one, 10 in two and 2 in all three elements. Twenty-nine brands were deficient in nitrogen, 57 in potash and 38 in phosphoric acid. The deficiencies in many of these brands were made up by an excess of some of the other elements so that only 17 out of the 284 brands analyzed showed a commercial shortage. This shortage ranged from a few cents to \$3.36 cents per ton; only eight brands showed a commercial shortage of over \$1.00 per ton. This certainly shows a much better condition than existed during the previous year.

Out of the 34 samples of ground bone, tankage, and dry ground fish analyzed, 5 showed a deficiency in nitrogen and 6 in phosphoric acid; only one of these brands, however, showed a commercial shortage.

The average retail cash price, valuation, and percentage of difference of the ground bone, dissolved bone, tankage and dry ground fish are as follows:

	Average retail cash price.	Valuation.	Percentage difference.
Ground bone,	\$30.08	\$29.09	3.40
Dissolved bone,	29.33	27.08	8.31
Tankage,	27.50	31.66	13.14*
Dry ground fish.	39.00	40.63	4.01*

* In excess of selling price.

In the chemicals and raw materials furnishing nitrogen, only one sample of cottonseed meal failed to meet the guarantee. Three samples of dissolved bone black and two samples of acid phosphate failed to meet the guarantee in available phosphoric acid. Among the potash compounds one sample of high grade sulphate, five of muriate and one of carbonate failed to meet the potash guarantee.

The various agricultural chemicals and raw materials as sold at retail in our local markets, have furnished nitrogen, phosphoric acid and potash to the consumer at the following prices:

Nitrogen.

	Cents per pound.
From nitrate of soda,	18.4
From blood,	20.5
From cottonseed meal,	22.05
From linseed meal,	26.7
From castor pomace,	22.4
From dry ground fish,	19.7
From fine tankage,	17.8
From coarse tankage,	13.0

Available Phosphoric Acid.

From dissolved bone black,	7.8
From acid phosphate (superphosphate.)	5.9

Potash.

From carbonate of potash,	8.0
From high grade sulphate of potash,	5.0
From potash-magnesia sulphate,	5.7
From muriate of potash,	4.5
From kainit,	5.11

Explanation of Analyses Tables. The figures representing the analyses and guarantees are per cents or pounds per hundred. (The first two columns of figures bearing the plus (+) and minus (—) signs show the average standing of the various complete fertilizers *for the past five years* as regards composition; they have absolutely no reference to the selling price of the fertilizer but simply show the *value in dollars and cents of the excess or deficiency of plant food in comparison with what is guaranteed*. Some of these figures were taken from less than a five year average for the reason that a number of the brands have not always been found by our collecting agents. In each case the small figure at the right of the column signifies the number of years which are represented in the average. Blanks signify that the brand has only been on the market one year or has only been analyzed once during the five years.

The column giving "dealer's cash price per ton" shows the cash price that was charged the consumer for one ton of fertilizer at the place where the brand was collected.

The valuation column shows the retail cash cost in our large markets of amounts of nitrogen, phosphoric acid and potash equivalent to those found in a ton of the fertilizer.

The "percentage of difference" column shows the percentage excess of the retail cash price over the valuation.

The "laboratory number" is simply a reference number used in the collection and analyses of the various brands.

In the nitrogen column the water soluble nitrogen includes nitrogen as nitrates and as ammoniates, with more or less amino compounds, in case of acidulated goods, which rank with the ammonia compounds in availability. The organic nitrogen, as expressed in the tables, is that part of the total nitrogen insoluble in water. The total nitrogen includes all forms of nitrogen present.

In the phosphoric acid column the insoluble phosphoric acid is that part of the total phosphoric acid insoluble in water or a neutral solution of citrate of ammonia. The reverted phosphoric acid is that portion dissolved by a neutral solution of citrate of ammonia (specific gravity 1.09) by treating two grams of the fertilizer, previously washed with water, with 100 c. c. of the citrate solution one-half hour at 65° C. It is supposed to represent that part of the phosphoric acid insoluble in water but soluble in soil and root acids—it represents the difference between the total and the sum of the soluble and insoluble phosphoric acids. The available phosphoric acid column represents the sum of the soluble and reverted phosphoric acid.

The potash column shows the per cent of potash soluble in water; results published without an asterisk (*) indicate that the potash is present as chloride or that sufficient chlorine is present in the fertilizer to unite with all of the potash. Foot-notes indicate the amount of potash present as sulphate and carbonate.

The guarantee columns show the percentage of nitrogen, total and available phosphoric acid, and potash guaranteed by the manufacturer to be present.

In the table of analyses of fertilizers manufactured for private use will be found the results on three brands of so-called "humus fertilizers" manufactured by the Wallace Fertilizer Co., 147 Nassau St., New York City.

These materials have not been licensed in Massachusetts but, so far as we have been able to ascertain, they have only been sold in very limited quantities and in each case directly to the consumer. The composition of these materials is very similar to the better grades of peat. An analysis of a bona fide sample of dry ground peat made at this station showed 24.59 per cent humus and a total nitrogen content of 2.49 per cent having an availability by the alkaline permanganate method of 35.34 per cent.

The Wallace fertilizers contain a little more phosphoric acid than is usually found in samples of peat; aside from this, their composition would indicate them to be dried peat, finely ground. The value of these fertilizers lies largely in their nitrogen and their relatively high percentage of humus, but the price charged for them (\$60.00 per ton) is altogether out of proportion to their value.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	-			
W. H. Abbott, Holyoke, Mass.						
Abbott's Tobacco Fertilizer	Sunderland E. Whately }	\$.93	—	\$40.00 40.00	\$37.61 36.32	6.35 10.13
Abbott's Eagle Brand Fertilizer	Holyoke . . } Hadley . . . }	—	\$.67	39.00 39.00	34.00 35.02	14.70 11.36
American Agric. Chem. Co., 92 State St., Boston.						
Grass and Lawn Top Dressing	Brockton . . } Dalton . . . }	4.42	—	42.00 36.50	27.07	44.93
Special Grass and Garden Mixture	Concord . . .	—	—	55.00	48.95	12.36
H. G. Fertilizer, with 10% Potash	Concord . . . }	3.87	—	39.00	27.56	36.97
" " " " "	Newburyp ^{rt}			38.00		
" " " " "	Southboro } Williamst ^{wn} }			36.00 38.00		
High Grade Tobacco Manure	Bradstreet . .	3.85 ²	—	48.50	38.75	25.16
Baker's A. A. Ammoniated Superphosphate	New Bedford .	1.04	—	32.00	23.27	37.51
Bradley's X L Superphosphate	Amherst . . . }	1.45	—	34.00	23.52	40.30
" " " " "	Bradstreet . . }			32.00		
" " " " "	New Bedford } Middleboro }			32.00 31.00		
Bradley's Potato Fertilizer	Amherst . . . }	1.34	—	32.00	20.77	54.06
" " " " "	W. Springf ^d			32.00		
" " " " "	Worcester . . }			34.00		
Church's Fish and Potash	W. Springf ^d	2.55	—	29.00	16.90	69.53
" " " " "	New Bedford }			28.00		
" " " " "	North Hadley }			29.00		
" " " " "	Chicopee Falls			30.00	17.46	71.82
Bradley's Potato Manure	Lawrence . . .	2.91	—	32.00	24.60	30.03
Bradley's Eclipse Phosphate for all Crops	Concord . . . }	2.14	—	28.00	17.34	64.33
" " " " "	Amesbury . . }			29.00		
Bradley's Comp. Manure for Potatoes and Vegetables	Bradstreet . . }	1.65	—	40.00	28.77	39.04
" " " " "	W. Springf ^d			40.00		
" " " " "	Worcester . . }			42.00		
" " " " "	Dalton . . . }			38.50		
Bradley's Comp. Manure for Asparagus	Concord . . .	3.24 ²	—	39.50	30.22	30.70
Bradley's Comp. Man. for Top Dress. Grass and Grain	Lawrence . . . }	1.27	—	38.00	29.23	30.55
" " " " "	Boston . . . }			38.00		
" " " " "	Dalton . . . }			38.50		
Bradley's Complete Manure, with 10% Potash	Bradstreet . . }	1.05	—	39.00	29.19	33.32
" " " " "	Newburyp ^{rt} }			40.00		

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
537	9.00	2.77	1.24	4.01	4.00	1.25	8.68	2.56	12.49	11.00	9.93	8.00	12.30*	10.00
72	9.53	2.69	1.37	4.06	4.00	.93	7.77	3.45	12.15	11.00	8.70	8.00	11.58*	10.00
483	9.44	1.50	1.72	3.22	2.50	1.22	9.22	3.40	13.84	13.00	10.44	11.00	10.64*	10.00
14	9.44	1.46	1.44	2.90	2.50	1.00	8.54	4.56	14.10	13.00	9.54	11.00	13.38*	10.00
326	9.03	4.66	.25	4.91	3.91	1.13	5.11	1.18	7.42	6.00	6.24	5.00	3.06	2.00
536														
312	2.77	8.33	.56	8.69	8.44	.17	7.36	5.01	12.54	7.25	7.53	—	9.16*	8.25
335	11.71	2.20	1.03	3.23	2.40	4.26	2.26	1.46	7.98	7.00	6.52	6.00	9.80	10.00
357														
442														
530														
78	8.98	3.37	2.31	5.68	5.78	2.33	4.27	1.41	8.01	6.00	6.60	5.00	10.32*	10.00
170	16.84	1.98	.83	2.86	2.50	6.08	3.03	2.58	11.69	11.00	9.11	9.00	2.80*	2.00
47	15.17	2.16	.83	2.99	2.50	7.52	1.72	2.48	11.72	11.00	9.24	9.00	2.44	2.00
77														
203	15.72	1.69	.89	2.58	2.50	6.05	2.77	2.46	11.28	11.00	8.82	9.00	2.34	2.00
209														
40	11.24	1.42	1.00	2.42	2.06	4.41	3.75	2.05	10.21	10.00	8.16	8.00	3.30	3.00
87	13.42	1.17	1.02	2.19	2.06	4.99	2.60	2.64	10.23	10.00	7.59	8.00	3.56	3.00
380	12.52	1.59	.82	2.41	2.06	4.07	3.89	2.56	10.52	10.00	7.96	8.00	3.30	3.00
89	11.96	.96	1.08	2.04	2.07	2.11	3.80	4.12	10.03	7.50	5.91	6.00	2.05	2.00
159														
281														
505	12.07	1.06	1.06	2.12	2.07	2.60	4.05	3.33	9.98	7.50	6.65	6.00	1.86*	2.00
245	11.91	1.63	1.41	3.04	2.50	4.96	2.46	1.77	9.19	8.00	7.42	6.00	5.78	5.00
273	15.34	.90	.50	1.40	1.03	6.91	2.77	1.48	11.16	10.00	9.68	8.00	2.32	2.00
353														
79	12.31	2.10	1.60	3.70	3.30	5.28	2.27	2.56	10.11	9.00	7.55	8.00	7.18	7.00
82														
382	12.62	2.20	1.64	3.84	3.30	5.82	2.72	1.05	9.59	9.00	8.54	8.00	7.30	7.00
534														
274	11.50	2.34	1.44	3.78	3.30	6.50	2.48	1.10	10.03	9.00	8.98	8.00	6.64*	7.00
240	8.22	5.38	.13	5.51	4.95	1.34	4.09	1.48	6.91	6.00	5.43	5.00	3.74	2.50
294														
528														
80	10.17	2.11	1.46	3.57	3.30	3.45	2.44	2.17	8.06	7.00	5.89	6.00	10.44	10.00
338														

* 537 Chlorine .49%, equivalent to .66% potash, 11.64% potash as sulphate.

72	.66%	.88%	10.70%	"	"
488	.59%	.79%	9.85%	"	"
14	.85%	1.14%	12.24%	"	"
312	6.45%	8.64%	5.2%	"	"
78	1.20%	1.61%	8.71%	"	"
170	1.56%	2.08%	.72%	"	"
505	1.23%	1.65%	.21%	"	"
274	.77%	1.03%	5.61%	"	"

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Difference Percentage Between Selling Price and Valuation.
		+	-			
American Agricultural Chemical Co. (Continued.)						
Bradley's Niagara Phosphate	W. Springfield } Chicopee Falls }	\$3.53 ⁴	—	\$26.00 26.00	\$18.58 17.56	39.95 48.06
Bradley's Complete for Corn and Grain	Chicopee Falls	1.37 ⁴	—	38.50	26.30	46.39
Bradley's Columbia Fish and Potash	W. Springfield } Westfield }	3.66	—	28.00 28.00	16.16 19.27	73.25 45.32
Bradley's Corn Phosphate	Newburyport } Chicopee Falls }	1.60	—	30.00 } 30.00 }	19.61	52.98
Bradley's English Lawn Fertilizer	New Bedford } Lexington }	5.05	—	44.00 } 56.00 }	31.99	56.31
Bradley's Tobacco Starter and Grower	Westfield } Southwick }	1.21	—	— } 36.00 }	27.98	28.66
Bradley's Seeding Down Manure	Boston . . . .	.74 ²	—	—	22.98	—
Clark's Cove Potato Fertilizer	Spencer	1.63	—	30.00	20.11	49.17
Clark's Cove King Philip Alkaline Guano	Spencer	1.67	—	28.00	16.43	70.42
Clark's Cove Great Planet Manure	E. Longmead ^w	.40	—	39.00	27.73	40.64
Clark's Cove Bay State Fertilizer	Oakdale	1.14 ²	—	33.00	22.88	44.23
Clark's Cove Potato Manure	Oakdale	3.46 ³	—	33.00	23.36	41.26
Crocker's Potato, Hop and Tobacco Phosphate	Worcester . . .	1.19	—	31.00	20.06	54.53
Crocker's Ammoniated Corn Phosphate	Worcester . . .	1.49 ⁴	—	31.00	18.48	67.74
Crocker's A. A. Complete Manure	Worcester . . .	.96 ²	—	33.00	28.74	14.82
Cumberland Superphosphate	N. Leominster	2.36 ³	—	31.00	18.75	65.33
Cumberland Potato Fertilizer	N. Leominster	.97 ⁴	—	31.00	20.33	52.50
Darling's Blood, Bone and Potash	Worcester . . .	1.52	—	41.00	31.87	28.64
Darling's Animal Fertilizer	Worcester . . .	1.89 ²	—	39.00	28.20	38.23
Darling's Dissolved Bone and Potash	West Newbury	—	—	36.50	26.65	36.96
Darling's Complete 10% Manure	Barre Plains . .	.78 ²	—	38.00	27.12	40.11
Darling's Potato Manure	Worcester . . .	2.88 ⁴	—	36.00	24.12	49.25
Darling's Farm Favorite	Worcester . . .	.67 ⁴	—	32.00	20.22	58.25
Darling's General Fertilizer	Worcester . . .	4.61 ²	—	30.00	20.19	48.52
Great Eastern Garden Special	Sunderland . . .	.84	—	38.00	29.15	30.36

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
88	13.90	1.22	.88	2.10	.82	3.84	3.74	2.81	10.39	8.00	7.58	7.00	2.50	1.00
506	14.39	.87	.77	1.64	.82	6.18	2.47	2.33	10.98	8.00	8.65	7.00	2.18	1.00
503	12.57	2.09	1.18	3.27	3.30	5.80	5.38	2.20	13.38	13.00	11.18	12.00	2.60	3.00
83	13.04	.80	1.12	1.92	1.65	1.34	4.34	3.81	9.49	6.00	5.68	5.00	2.16*	2.00
482	12.34	1.32	1.15	2.47	1.65	2.94	3.71	2.84	9.49	6.00	6.65	5.00	2.50	2.00
325 / 504	13.95	1.54	.84	2.38	2.06	5.69	2.72	2.00	10.41	10.00	8.41	8.00	1.80	1.50
205 / 359	8.45	5.86	.04	5.90	4.95	1.89	4.08	1.30	7.27	6.00	5.97	5.00	4.66*	2.50
479 / 480	13.36	2.06	1.54	3.60	3.30	6.72	2.31	1.10	10.13	10.00	9.03	8.00	4.83*	4.00
288	12.93	1.21	1.78	2.99	2.50	5.56	2.96	2.69	11.21	11.00	8.52	9.00	2.24	2.00
427	15.39	1.31	.86	2.17	2.06	6.50	1.85	2.17	10.52	10.00	8.35	8.00	3.16	3.00
409	15.16	.90	.39	1.29	1.03	6.27	2.91	1.92	11.10	10.00	9.18	8.00	2.16	2.00
478	13.34	1.83	1.66	3.49	3.30	4.80	3.03	1.61	9.44	9.00	7.83	8.00	7.04	7.00
621	15.80	1.60	1.24	2.84	2.50	6.56	2.96	1.92	11.44	11.00	9.52	9.00	2.14*	2.00
622	15.60	1.75	1.01	2.76	2.50	6.01	2.20	1.79	10.00	8.00	8.21	6.00	4.74	5.00
397	15.73	1.35	.75	2.10	2.06	6.97	1.94	1.89	10.80	10.00	8.91	8.00	2.94	3.00
405	15.50	1.32	.77	2.09	2.06	7.07	1.25	2.02	10.34	10.00	8.32	8.00	1.68	1.50
366	14.21	2.19	1.55	3.74	3.30	6.05	1.85	1.69	9.59	9.00	7.90	8.00	6.92	7.00
400	13.21	1.27	.87	2.14	2.06	6.65	1.67	2.20	10.52	10.00	8.32	8.00	1.70	1.50
404	11.55	1.32	1.08	2.40	2.06	4.41	3.49	2.05	9.95	10.00	7.90	8.00	3.12	3.00
399	11.22	3.33	1.36	4.69	4.10	4.39	2.62	2.51	9.52	8.00	7.01	7.00	7.32	7.00
402	13.30	2.30	1.48	3.78	3.30	7.04	1.40	1.56	10.00	10.00	8.44	8.00	4.82*	4.00
605	12.98	2.11	1.04	3.15	2.40	3.88	2.29	1.71	7.88	7.00	6.17	6.00	9.36	10.00
623	11.72	3.02	.35	3.37	3.30	3.68	2.82	1.30	7.80	7.00	6.50	6.00	9.14	10.00
619	12.65	1.75	1.07	2.82	2.50	6.08	1.88	1.51	9.47	8.00	7.96	6.00	5.74	5.00
620	13.57	1.27	.99	2.26	2.06	5.44	2.72	2.05	10.21	10.00	8.16	8.00	3.24	3.00
618	12.10	1.48	.65	2.13	1.25	5.25	1.86	2.61	9.72	7.00	7.11	6.00	4.80	3.00
52	11.42	2.04	1.52	3.56	3.30	6.43	1.74	1.71	9.88	9.00	8.17	8.00	7.48*	7.00

* 482 Chlorine 1.27%, equivalent to 1.70% potash, .80% potash as sulphate.

205-359	..	3.07%	..	3.93%	..	.73%	..	..
479-480	..	.33%	..	.45%	..	4.43%	..	..
621	..	1.27%	..	1.70%	..	.44%	..	..
402	..	.61%	..	.81%	..	4.01%	..	..
52	..	3.92%	..	5.25%	..	2.23%	..	..

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	—			
American Agricultural Chemical Co. (Continued.)						
Great Eastern Vegetable, Vine and Tobacco	Pratt's Junc.	\$1.35	—	\$31.00	\$22.63	37.00
Great Eastern Northern Corn Special A	Pratt's Junc.	1.29	—	31.00	22.89	35.43
Pacific Potato Special	Westport . . } Newburyport }	1.62	—	30.00 } 32.00 }	21.29	45.61
Pacific Nobsque Guano	Westport . . } Newburyport }	1.67	—	29.00 } 26.00 }	16.44	67.27
Pacific High Grade General Fertilizer	Charlemont	—	—	37.50	28.74	30.48
Soluble Pacific Guano	Newburyport } Clinton . . }	1.56	—	28.00 } 30.00 }	19.59	48.03
Packer's Union Animal Corn Fertilizer	Amherst	2.53	—	35.00	22.13	58.14
Packer's Union Potato Manure	Marlboro	2.29	—	33.00	24.54	34.48
Packer's Union Gardeners' Complete Manure	Concord } Amherst . . }	2.23	—	38.00 }	27.19	39.76
Packer's Union Universal Fertilizer	Concord . . } Gt. Barrington }	1.99 ³	—	27.00 } 28.00 }	18.85	45.88
Quinnipiac Market Garden Manure	Fall River . . } Seekonk . . }	1.56	—	38.50 }	29.35	32.88
“ “ “ “	Pittsfield . . }			36.00 } 40.50 }		
Quinnipiac Potato Phosphate	Fall River . . . . .	.98	—	31.00	20.80	49.03
Quinnipiac Corn Manure	Williamstown	1.99	—	—	20.38	—
Quinnipiac Climax Phosphate	Newbury	2.01 ⁴	—	28.00	18.15	54.27
Quinnipiac Phosphate	Seekonk . . } Pittsfield . . }	.83	—	30.00 } 35.00 }	22.41	45.02
Quinnipiac Potato Manure	Seekonk	2.84 ³	—	30.00	25.71	16.68
Quinnipiac Onion Manure	Hatfield	1.21 ⁴	—	37.00	29.09	27.19
Read's Practical Potato Fertilizer	North Hadley } Newburyport }	3.93 ⁴	—	29.00 }	20.16	50.44
“ “ “ “	Williamst'n }			31.50 } 30.50 }		
Read's Standard Superphosphate	Ward Hill	1.99	—	30.00	18.84	59.23
Read's H. G. Farmers' Friend Superphosphate	North Hadley } Concord . . }	.90 ³	—	39.00 }	28.60	36.36
“ “ “ “ “ “	E. Longm'dw } Williamst'n }			38.00 } 40.00 } 39.00 }		
Read's Vegetable and Vine	North Hadley } Clinton . . }	1.20 ³	—	32.00 } 34.00 }	23.36	41.26

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
450	12.83	1.50	.93	2.43	2.06	5.69	1.75	2.00	9.44	10.00	7.44	8.00	6.12	6.00
447	14.83	1.95	1.02	2.97	2.50	6.27	2.61	2.15	11.03	11.00	8.88	9.00	2.36	2.00
156 } 360 }	10.97	1.70	.82	2.52	2.06	5.76	2.45	2.25	10.46	10.00	8.21	8.00	3.26	3.00
194 } 357 }	14.84	.92	.54	1.46	1.00	5.78	2.42	2.44	10.64	10.00	8.20	8.00	2.22	2.00
596	13.02	1.97	1.59	3.56	3.30	5.95	2.69	1.36	10.00	9.00	8.64	8.00	7.08	7.00
342 } 438 }	15.07	1.31	.87	2.18	2.06	5.86	3.33	2.02	11.21	10.00	9.19	8.00	1.76	1.50
598	18.41	1.76	.96	2.72	2.50	6.75	2.54	2.10	11.39	11.00	9.29	9.00	2.12	2.00
616	14.63	1.18	1.29	2.47	2.06	7.07	2.53	1.56	11.16	10.00	9.60	8.00	5.78	6.00
287 } 601 }	11.93	2.10	.82	2.92	2.40	4.13	2.70	1.64	8.47	7.00	6.83	6.00	9.92*	10.00
290 } 516 }	12.38	1.03	.56	1.59	.82	4.84	3.07	2.71	10.62	10.00	7.91	8.00	4.78	4.00
164 } 173 } 525 }	13.91	2.37	1.41	3.78	3.30	5.48	2.73	2.15	10.36	9.00	8.21	8.00	7.06	7.00
179	13.42	1.60	.78	2.38	2.06	4.71	3.53	2.30	10.54	10.00	8.24	8.00	3.38	3.00
508	15.09	1.40	.79	2.19	2.06	6.33	2.91	2.20	11.44	10.00	9.24	8.00	2.50	1.50
608	12.73	1.03	.63	1.66	1.00	4.07	4.35	3.25	11.67	10.00	8.42	8.00	2.90	2.00
193 } 524 }	17.48	1.89	.86	2.75	2.50	6.93	2.21	2.46	11.60	11.00	9.14	9.00	2.34	2.00
174	15.49	2.01	1.21	3.22	2.50	5.86	2.38	1.87	10.11	8.00	8.24	6.00	5.36	5.00
597	12.03	2.09	1.54	3.63	3.30	6.33	2.50	1.07	9.90	9.00	8.83	8.00	7.10	7.00
284 } 334 } 585 }	12.28	.05	1.28	1.33	.82	5.16	1.75	1.71	8.62	5.00	6.91	4.00	8.58	8.00
611	14.47	.16	1.10	1.26	.82	6.88	2.79	1.46	11.13	10.00	9.67	8.00	4.44	4.00
285 } 300 } 467 } 591 }	11.63	2.20	1.14	3.34	3.30	3.65	3.39	1.43	8.47	7.00	7.04	6.00	10.02	10.00
282 } 424 }	13.98	1.57	.91	2.48	2.06	5.80	3.01	2.17	10.98	10.00	8.81	8.00	5.22	6.00

* 287-601 Chlorine 5.33%, equivalent to 7.13% potash, 2.76% potash as sulphate.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	-			
American Agricultural Chemical Co. (Continued.)						
Standard Special for Potatoes	Merrimac . . .	\$.92 ²	—	\$30.00	\$20.25	48.14
Standard Complete Manure	Merrimac . . .	—	—	36.50	28.68	27.26
Standard Fertilizer	Merrimac . . .	—	—	30.00	18.58	61.46
Standard Guano for all Crops	Newburyport	2.25 ³	—	31.00	19.35	60.20
Tucker's Original Bay State Bone Superphosphate . .	Framingham .	—	—	27.50	20.02	37.36
Tucker's Special Potato Fertilizer	Newburyport } Framingham }	.87 ⁴	—	33.00 } 28.00 }	20.18	51.14
Wheeler's Corn Fertilizer	Framingham .	1.60	—	30.00	17.61	70.35
Wheeler's Potato Manure	Framingham .	.47 ⁴	—	30.00	20.05	49.62
Wheeler's Havana Tobacco Grower	Salisbury . .	1.18 ⁴	—	38.00	26.32	44.37
Wheeler's Bermuda Onion Grower	Danvers . . .	1.67 ³	—	—	19.19	—
Williams & Clark's Royal Bone Phosphate	Brockton . . .	2.28	—	28.00	17.68	56.60
Williams & Clark's Americus Potato Manure	Brockton . . } Southboro . }	1.83 ³	—	32.00 } 31.00 }	20.66	52.47
Williams & Clark's Prolific Crop Producer	Brockton . . }	3.33	—	25.00 }	17.12	53.79
" " " " "	Worcester . . }			28.00 }		
" " " " "	Chicopee Falls }			26.00 }		
Williams & Clark's Ammoniated Bone Superphosphate	Southboro . .	1.23 ³	—	31.00	21.09	46.99
Williams & Clark's Americus Corn Phosphate	Brockton . . } Southboro . }	1.35 ³	—	32.00 } 31.00 }	19.12	64.74
Williams & Clark's Potato Phosphate	Southboro . .	5.37 ²	—	31.00	25.95	19.47
Armour Fertilizer Works, Baltimore, Md.						
High Grade Potato Fertilizer	Amherst . . . }	1.50	—	33.00 }	24.98	32.10
" " " " "	New Bedford }			31.00 }		
" " " " "	Taunton . . }			34.00 }		
" " " " "	Haverhill . . }	1.80	—	35.00 }	26.58	25.40
All Soluble	Amherst . . . }			33.00 }		
" " " " "	Taunton . . }			34.00 }		
" " " " "	Haverhill . . }			34.00 }		
" " " " "	Concord . . . }	2.68 ³	—	34.00 }	24.81	37.04
Blood, Bone and Potash	Amherst . . . }			33.00 }		
Complete Potato	New Bedford }			32.00 }		
	Haverhill . . }				22.74	42.92

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
607	11.20	1.42	.95	2.37	2.06	3.75	4.24	2.07	10.06	10.00	7.99	8.00	3.18	3.00
610	11.32	1.90	1.59	3.49	3.30	5.95	2.55	2.07	10.57	9.00	8.50	8.00	7.12	7.00
606	14.67	1.29	.77	2.06	2.06	6.12	2.35	2.20	10.67	10.00	8.47	8.00	1.80	1.50
333	14.75	1.17	.85	2.02	1.03	5.88	3.15	2.30	11.33	10.00	9.03	8.00	2.22	2.00
615	15.08	1.55	.74	2.29	2.06	6.78	2.33	1.84	10.95	10.00	9.11	8.00	1.92	1.50
332 } 617 }	14.24	1.46	.79	2.25	2.06	5.41	2.88	2.23	10.52	10.00	8.29	8.00	3.12	3.00
410	13.91	1.22	.58	1.80	1.65	5.76	2.35	2.38	10.49	10.00	8.11	8.00	2.22	2.00
445	12.56	1.46	.79	2.25	2.06	4.48	3.61	2.66	10.75	10.00	8.09	8.00	3.08	3.00
609	9.17	1.85	.51	2.36	2.40	4.77	1.60	1.97	8.34	7.00	6.37	6.00	10.50*	10.00
604	13.41	1.01	.70	1.71	.82	6.05	1.97	2.50	10.52	10.00	8.02	8.00	4.42	4.00
335	14.98	1.32	.40	1.72	1.03	5.12	3.09	2.10	10.31	10.00	8.21	8.00	3.08	2.00
345 } 443 }	14.97	1.53	.87	2.40	2.06	6.01	2.18	1.97	10.16	10.00	8.19	8.00	3.14	2.00
346 } 379 } 507 }	14.49	.99	.62	1.61	.82	5.80	3.47	1.89	11.16	8.00	9.27	7.00	1.46	1.00
444	13.16	1.66	.98	2.64	2.50	5.12	3.43	2.48	11.03	11.00	8.55	9.00	2.04	2.00
324 } 441 }	14.23	1.49	.77	2.26	2.06	6.50	1.95	2.07	10.52	10.00	8.45	8.00	1.60	1.50
448	14.26	1.49	1.62	3.11	2.50	6.72	2.05	1.59	10.36	8.00	8.77	6.00	5.40	5.00
49 } 143 } 185 } 264 }	9.99	1.31	.61	1.92	1.65	7.40	.76	.56	8.72	10.00	8.16	8.00	10.39*	10.00
	9.18	1.12	1.16	2.29	1.65	6.33	2.01	1.13	9.47	10.00	8.34	8.00	10.28*	10.00
46 } 225 } 260 } 276 }	11.92	2.48	1.24	3.72	2.89	7.36	1.30	.66	9.32	10.00	8.66	8.00	4.46	4.00
	11.19	1.76	1.43	3.19	2.89	6.56	1.68	.54	8.78	10.00	8.24	8.00	4.88	4.00
48	10.69	2.72	1.69	4.41	4.11	6.95	1.31	.56	8.82	10.00	8.26	8.00	6.54	7.00
184 } 254 }	11.21	1.19	1.07	2.26	1.65	5.98	1.94	.26	8.18	8.00	7.92	7.00	7.20	6.00

* 609 Chlorine .58%, equivalent to .78% potash, 9.72% potash as sulphate.
 49 " 5.30% " 7.09% " 3.30% " "
 143-185-264 " 5.93% " 7.94% " 2.34% " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	-			
Armour Fertilizer Works (Continued.)						
Fish and Potash Mixture	New Bedford } Taunton . . }	\$3.86 ²	—	\$26.00 } 25.00 }	\$18.16	40.41
Grain Grower	Haverhill . . }	2.25	—	28.00 }	18.76	56.34
" "	Salem . . }			26.00 }		
" "	Marlboro . . }			34.00 }		
Ammoniated Bone with Potash	New Bedford }	2.21	—	31.00 }	19.85	52.79
" " " "	Haverhill . . }			30.00 }		
" " " "	Concord . . }			30.00 }		
Fruit and Root Crop Special	Haverhill . . }	1.97 ³	—	30.00 }	20.79	58.73
" " " "	Marlboro . . }			36.00 }		
Corn King	Westfield . .	2.04 ⁴	—	32.00	23.18	38.05
Market Garden Special	Seekonk . . .	.36 ²	—	36.00	28.18	27.75
Beach Soap Co., Lawrence, Mass.						
Beach's Advance Brand Fertilizer	Lawrence . .	4.54	—	33.00	31.67	4.20
Beach's Market Garden Brand Fertilizer	Lawrence . .	1.27 ²	—	40.00	36.40	9.89
Beach's Reliance Brand Fertilizer	Lawrence . .	—	—	28.00	25.17	11.24
Berkshire Fertilizer Co., Bridgeport, Conn.						
Berkshire Potato and Vegetable Phosphate	N. Amherst }	1.91	—	31.00 }	19.96	55.32
" " " " " "	Somerset . . }			29.50 }	19.63	50.23
" " " " " "	Leeds . . . }			32.00 }	18.68	71.30
Berkshire Complete Tobacco Fertilizer	N. Amherst }	2.04	—	33.00 }	25.89	25.53
" " " " " "	Hadley . . }			32.00 }		
Berkshire Ammoniated Bone Phosphate	Leeds	3.34	—	30.00	16.17	65.52
Berkshire Long Island Special	Seekonk . . .	—	—	37.00	28.00	32.14
Berkshire Complete Fertilizer (Root)	Somerset . . .	2.00 ³	—	31.50	25.29	24.55
Bonora Chemical Co., New York City.						
Bonora	Boston	—	—	†	68.52	—
Bowker Fertilizer Co., 43 Chatham St., Boston.						
Bowker's Square Brand Bone and Potash	Middleboro . .	3.22 ³	—	28.00	18.42	52.00
Bowker's Market Garden Fertilizer	Springfield . }	.59	—	36.00 }	25.69	41.10
" " " " " "	Dalton . . . }			36.50 }		

† Sold only in 1 and 5 lb. packages at 50c per lb.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
166 } 220 }	7.50	.52	1.70	2.22	2.06	3.90	2.14	1.02	7.06	7.00	6.04	6.00	3.56	2.00
269 } 339 } 446 }	10.05	.95	1.01	1.96	1.65	6.33	2.12	.97	9.42	10.00	8.45	8.00	2.90	2.00
151 } 233 } 279 }	9.15	1.24	1.66	2.90	2.61	3.77	2.24	1.38	7.39	8.00	6.01	6.00	2.48	2.00
261 } 425 }	10.70	.90	1.05	1.95	1.65	6.18	1.75	1.15	9.08	10.00	7.93	8.00	5.80	5.00
434	8.66	1.48	1.33	2.81	2.47	5.54	2.26	.64	8.44	9.00	7.80	8.00	5.20	4.00
198	12.54	2.40	1.05	3.45	3.29	6.75	1.95	.40	9.10	9.00	8.70	8.00	7.14*	7.00
242	6.04	1.97	1.46	3.43	2.47	4.32	8.81	.61	13.74	10.00	13.13	8.00	6.16*	6.00
270	5.20	3.75	1.03	4.78	4.74	2.09	7.09	.72	9.90	8.00	9.18	7.00	9.90*	9.75
232	6.89	1.71	1.14	2.85	1.65	2.92	7.93	2.15	13.00	10.00	10.85	8.00	3.82	3.00
13 } 214 } 690 }	9.99 10.00 9.33	.84 .90 .63	1.36 1.45 1.38	2.20 2.35 2.01	1.70 1.70 1.70	4.90 3.65 4.13	2.92 3.18 2.47	2.20 .87 .64	10.02 7.70 7.24	8.00 8.00 8.00	7.82 6.83 6.60	6.00 6.00 6.00	3.36 4.10 4.80	4.00 4.00 4.00
17 } 26 }	9.11	.97	1.81	2.78	2.50	5.05	3.25	1.90	10.20	10.00	8.30	8.00	6.24*	6.00
599	9.67	.59	.82	1.41	.80	5.86	2.73	.72	9.31	10.00	8.59	8.00	2.38	2.00
141	9.47	1.04	2.72	3.76	3.30	4.86	2.03	1.25	8.14	8.00	6.89	6.00	6.84	7.00
218	10.51	1.10	1.96	3.06	2.50	5.25	2.30	.82	8.37	10.00	7.55	8.00	6.50	6.00
313	2.91	16.10	—	16.10	15.00	5.18	—	—	5.18	—	5.18	5.00	4.44	3.00
228	14.70	1.31	.61	1.92	1.65	6.14	2.36	2.17	10.67	7.00	8.50	6.00	2.28	2.00
439 } 517 }	12.30	1.48	1.01	2.49	2.47	4.32	3.27	.90	8.49	7.00	7.59	7.00	9.94	10.00

* 198 Chlorine 4.15%, equivalent to 5.56% potash, 1.58% potash as sulphate.

242 " 1.32% " 1.76% " 4.40% " 4.40% " 4.40% "

270 " 2.20% " 3.06% " 6.81% " 6.81% "

17-26 " .49% " .66% " 5.58% " 5.58% "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	-			
Bowker Fertilizer Co. (Continued.)						
Bowker's Tobacco Starter	Southwick . .	\$3.12 ⁴	—	\$33.00	\$23.70	39.24
Bowker's Potato and Vegetable Fertilizer	Middleboro . .	1.35 ⁴	—	32.00	22.62	41.47
Gloucester Fish and Potash	Wrentham . .	3.68 ³	—	25.00	13.71	82.34
Bowker's Fisherman's Brand Fish and Potash	Southwick . . } Springfield . . }	—	—	27.00 } 26.00 }	19.97	32.69
Bowker's Early Potato Manure	North Adams .	.01	—	39.00	27.04	44.23
Bowker's Soluble Animal Fertilizer	Fall River . .	1.41	—	33.00	22.86	44.35
Bowker's Ammoniated Food for Flowers	Boston	10.06 ⁴	—	†	23.50	—
Bowker's Potato and Vegetable Phosphate	Gt. Barrington	2.68 ³	—	30.00	18.10	65.74
Bowker's Lawn and Garden Dressing	Concord . . } Lexington . . }	3.07	—	45.00 } 56.00 }	25.86	95.29
Bowker's Bone and Wood Ash	Lowell . . . } Springfield . . }	1.76 ⁴	—	28.00 } 32.00 }	18.18	65.01
Bowker's Hill and Drill Phosphate	Middleboro . .	.54	—	33.00	21.89	50.75
Bowker's High Grade Fertilizer	Lowell	3.27	—	32.00	22.89	40.52
Bowker's Special Fertilizer, Corn, Grain and Grass	Amherst	1.32 ²	—	32.00	23.82	34.34
Bowker's Corn Phosphate	Lawrence . . } N. Adams . . }	1.85	—	32.00 } 30.00 }	18.51	61.15
" " " " " " " " " " " " " " " " " " "	Dalton }			27.50 }		
Bowker's Bone, Blood and Potash	Lowell	—	.14 ⁴	40.00	30.11	32.84
Bowker's Farm and Garden Phosphate	Bridgewater . . } N. Adams . . }	1.01	—	30.00 } 30.00 }	17.83	68.25
Bowker's Complete Alkaline Tobacco Grower	Southwick . .	2.64 ³	—	36.00	37.39 †	3.71
Bowker's Special Fertilizer for Different Crops	Gt. Barrington	—	—	33.00	23.00	43.47
Bowker's Sure Crop Bone Phosphate	Lawrence . . .	1.47 ⁴	—	29.00	17.92	61.84
Bowker's Clover Leaf Brand Bone and Wood Ash Fert	Gt. Barrington	2.51 ⁴	—	32.00	25.48	25.58
Bowker's Fish and Potash, Square Brand	Montague . .	1.13 ³	—	31.00	19.03	62.09
Bowker's Fish and Potash, "D" Brand	Wellesley . .	3.55 ⁴	—	30.00	15.85	69.27
Stockbridge's Tobacco Manure	S. Deerfield . .	—	.26 ²	48.00	34.58	38.80
Stockbridge's Spec. Comp. Man. Corn and all Gr. Crops	Bridgewater . . } S. Fram'g'm . . }	.25 ²	—	37.00 } 38.00 }	29.46	27.29
Stockbridge's Spec. Comp. Manure for Seeding Down	Bridgewater . .	1.14 ²	—	38.00	26.15	45.31

† Sold only in one-half lb. and 1 lb. packages.

‡ Valuation in excess of selling price.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
481	10.96	1.40	1.56	2.96	2.47	7.10	2.14	2.17	11.41	10.00	9.24	9.00	2.22‡	2.00
219	13.82	1.49	1.15	2.64	2.47	6.43	2.15	2.48	11.06	9.00	8.58	8.00	3.56	4.00
567	14.00	.89	.38	1.27	.82	2.09	4.62	3.24	9.95	9.00	6.71	6.00	1.54	1.00
464 } 498 }	13.71	1.44	1.03	2.47	2.47	4.13	2.06	2.10	8.29	5.00	6.19	4.00	4.24	4.00
510	11.91	1.61	1.70	3.31	3.30	5.82	1.67	2.23	9.72	9.00	7.49	8.00	6.94	7.00
156	14.18	1.52	.98	2.50	2.50	6.24	2.30	2.46	11.00	—	8.54	8.00	4.62	4.00
515	5.38	1.11	1.73	2.84	2.00	1.47	7.58	1.82	10.87	6.00	9.05	4.00	3.36*	2.00
522	14.06	1.14	.96	2.10	1.65	3.58	3.61	3.17	10.36	9.00	7.19	8.00	2.16	2.00
509 } 551 }	7.03	3.36	.82	4.18	3.00	1.64	3.48	1.23	6.35	8.00	5.12	4.00	5.66	5.00
251 } 496 }	14.50	1.23	.71	1.94	1.65	6.37	1.79	2.26	10.42	8.00	8.16	6.00	2.16	2.00
226	15.25	1.62	1.05	2.67	2.47	7.01	2.07	2.20	11.28	10.00	9.08	9.00	2.16	2.00
250	16.36	1.57	1.01	2.58	2.47	6.20	2.36	1.86	10.42	10.00	8.56	6.00	4.56	4.00
573	11.96	1.73	1.08	2.81	2.47	6.33	2.96	2.56	11.85	9.00	9.29	8.00	3.50	4.00
241 } 513 } 530 }	13.70	1.12	.88	2.00	1.65	5.28	2.90	2.41	10.59	9.00	8.18	9.00	2.26	2.00
235	12.97	2.67	1.57	4.24	4.10	4.77	2.09	1.89	8.75	8.00	6.86	7.00	7.50	7.00
352 } 511 }	14.34	1.09	.70	1.79	1.65	6.27	1.95	2.50	10.72	9.00	8.22	8.00	2.24	2.00
465	11.28	3.20	3.34	6.54	4.00	.26	5.04	5.63	10.93	5.00	5.30	4.00	4.98*	5.00
519	13.27	1.35	1.32	2.67	2.47	5.80	2.82	1.41	10.03	9.00	8.62	8.00	4.34	4.00
230	14.87	.94	.85	1.79	.82	6.56	1.86	2.17	10.59	9.00	8.42	8.00	2.18	2.00
518	9.70	1.45	1.57	3.02	1.75	.64	9.05	3.10	12.79	9.00	9.69	7.00	4.28	2.25
553	11.91	1.60	1.05	2.65	2.47	2.02	2.66	1.74	6.42	5.00	4.68	4.00	4.34	4.00
568	8.57	2.37	.46	2.83	2.47	1.38	1.85	.74	3.97	8.00	3.23	3.00	2.16	2.00
540	9.60	2.92	2.60	5.52	5.75	4.03	2.06	.87	6.96	6.00	6.09	4.00	7.33*	10.00
328 } 430 }	13.09	2.56	1.29	3.65	3.29	6.72	3.56	1.18	11.26	11.00	10.08	10.00	6.15	7.00
341	14.07	1.58	.91	2.49	2.47	4.80	2.44	1.92	9.16	9.00	7.24	6.00	10.35	10.00

† 481 Potash as sulphate.

* 315 Chlorine .38%, equivalent to .51% potash, 2.85% potash as sulphate.

465 .86% " 1.15% " 3.83% "

540 2.21% " 2.96% " 4.37% "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	-			
Bowker Fertilizer Co. (Continued).						
Stockbridge's Sp. Com. Man. for Q'k Growth and Forc.	Fall River . . . }	\$1.19 ²	—	\$38.50	\$30.23	27.55
" " " " " " " "	Bridgewater . . }			38.00		
" " " " " " " "	Natick . . . }			39.00	29.83	29.03
Stockbridge's Sp. Com. Manure for Potatoes and Veg.	Taunton . . . }	1.92 ⁴	—	37.00	30.09	25.47
" " " " " " " "	Fall River . . }			38.50		
" " " " " " " "	Middleboro . . }			40.00	28.91	29.13
" " " " " " " "	Concord . . . }			32.00		
" " " " " " " "	Mansfield . . }			40.00		
Joseph Breck & Sons Corp., Boston, Mass.						
Breck's Lawn and Garden Dressing	Boston	4.35	—	50.00	30.46	64.14
Breck's Market Garden Manure	Boston . . . . .	.78	—	32.00	22.90	39.73
Ram's Head Brand Sheep Manure, Pulverized	Boston	—	—	30.00	13.55	121.40
Buffalo Fertilizer Co., Buffalo, N. Y.						
Farmers' Choice	E. Pepperell Townsend . }	2.10 ³	—	27.00 /	19.27	34.92
" " " " " " " "	" " " " " " " "			25.00 }		
Fish Guano	E. Pepperell Townsend . }	2.55 ²	—	25.00 /	19.09	30.95
" " " " " " " "	" " " " " " " "			25.00 }		
Ideal Wheat and Corn	Townsend . . . }	—	—	28.00 /	23.78	26.15
" " " " " " " "	E. Pepperell . . }			32.00 }		
Celery and Potato Special	E. Pepperell Townsend . }	1.53 ²	—	36.00 /	26.83	30.45
" " " " " " " "	" " " " " " " "			34.00 }		
Vegetable and Potato	E. Pepperell Townsend . }	1.07 ²	—	34.00 /	22.44	51.51
" " " " " " " "	" " " " " " " "			34.00 }		
Top Dresser	N. Amherst . . }	—	\$.81 ²	35.00	36.71	† 4.65
" " " " " " " "	Townsend . . . }			36.00	32.21	11.76
High Grade Manure	N. Amherst . . }	.21 ³	—	32.00	33.56	† 4.64
" " " " " " " "	Townsend . . . }			36.00	26.75	34.57
Coe-Mortimer Co., 24-26 Stone St., New York City.						
Peruvian Market Garden Fertilizer	Hadley	—	—	48.50	42.34	14.57
E. Frank Coe's H. G. Ammon. Bone Superphosphate .	Westfield . . .	3.13	—	33.00	22.79	44.80
E. Frank Coe's Excelsior Potato Fertilizer	Dighton	2.56	—	39.00	28.30	37.80
Peruvian Guano, Chincha Grade	Hadley }	4.17 ³	—	41.00	38.57	16.67
" " " " " " " "	N. Amherst . . }			47.50		
" " " " " " " "	Sunderland . . }			45.75		
" " " " " " " "	Whately }			—		
" " " " " " " "	Whately }			45.75		

† Valuation in excess of selling price.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
199 358 574	12.07 11.48	3.29 3.83	1.62 1.08	4.91 4.91	4.93 4.93	1.85 1.77	2.79 2.43	1.92 1.94	6.56 6.14	6.00 6.00	4.64 4.20	4.00 4.00	7.40 7.64	6.00 6.00
146 177 227 311 564	9.21 11.12	2.37 2.20	1.44 1.38	3.81 3.58	3.29 3.29	3.45 4.32	2.69 2.15	2.56 1.59	8.70 8.06	7.00 7.00	6.14 6.47	6.00 6.00	10.04 9.66	10.00 10.00
299	8.62	3.80	1.24	5.04	4.12	1.32	4.48	.95	6.75	—	5.80	5.00	6.58	5.00
291	15.80	1.80	1.05	2.85	2.50	7.23	2.26	1.97	11.46	11.00	9.49	9.00	2.21	2.00
295	5.15	—	2.42	2.42	2.68	—	—	—	1.57	1.50	—	—	2.37	1.75
581 583	13.98	.86	.32	1.18	.82	4.86	5.02	1.43	11.31	9.00	9.88	8.00	5.68	5.00
582 588	10.80	.88	.72	1.60	.82	4.29	4.79	2.10	11.18	10.00	9.08	9.00	4.05	2.00
576 579	11.75	1.15	.58	1.73	1.64	2.05	10.36	2.02	14.43	10.00	12.41	9.00	5.83	5.00
577 595	11.01	1.00	1.03	2.03	1.64	2.75	4.85	2.48	10.08	9.00	7.60	8.00	12.71	10.00
580 587	14.61	1.70	.36	2.06	2.45	4.00	4.29	1.64	9.93	9.00	9.29	8.00	7.24	7.00
114 593	8.68 13.48	4.04 3.75	2.48 1.51	6.52 5.26	5.74 5.74	4.80 5.35	3.18 3.51	1.46 1.07	9.44 9.93	7.00 7.00	7.98 8.86	6.00 6.00	3.94 3.76	5.00 5.00
118 592	8.29 12.51	2.46 2.43	1.31 .26	3.77 2.69	3.28 3.28	5.73 3.71	2.46 3.71	1.33 2.07	9.52 9.49	8.00 8.00	8.19 7.42	7.00 7.00	10.72* 10.37	10.00 10.00
25	8.20	3.71	1.83	5.54	5.70	5.69	5.57	3.12	14.38	9.00	11.26	8.00	9.46*	10.00
470	11.94	1.35	1.07	2.42	1.85	6.12	5.09	.87	12.08	11.00	11.21	9.00	2.76	2.25
138	10.92	1.81	.78	2.59	2.47	5.28	3.47	3.48	12.23	9.00	8.75	7.00	9.02*	8.00
8 19 34 113 119 555	10.46	5.77	1.69	7.46	7.00	3.26	4.32	1.82	9.40	8.50	7.58	6.50	2.64*	2.00

* 118 Chlorine .51%, equivalent to .60% potash, 10.03% potash as sulphate.
 25 " 1.48% " 1.98% " 7.48% "
 138 " 2.03% " 2.72% " 6.30% "
 8-19-34-113-119-555 " 1.13% " 1.51% " 1.13% "

* Sold only in small quantities.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.							Potash (K ₂ O) in 100 lbs.	
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
458 } 462 }	13.10	.90	.91	1.81	1.23	4.71	4.83	2.66	12.20	10.50	9.54	8.50	3.97	2.50
459 } 469 }	12.40	1.29	.89	2.18	1.65	4.73	4.97	1.20	10.90	10.00	9.70	8.00	5.03	4.00
455	9.40	4.23	1.90	6.13	5.74	.70	6.95	3.71	11.36	8.00	7.65	6.00	9.64*	10.00
137	12.44	1.70	1.08	2.78	2.40	5.80	3.92	.67	10.39	10.00	9.72	8.00	5.60*	6.00
316	.65	13.31	—	13.31	13.00	24.05	.28	—	24.33	25.30	24.33	—	27.02†	24.60
221 } 388 } 422 } 429 }	6.64	1.69	1.81	3.50	3.25	2.69	3.68	2.89	9.26	7.00	6.37	6.00	10.14	10.00
197 } 453 }	9.24	1.21	.94	2.15	2.00	5.60	2.86	1.22	9.68	9.00	8.46	8.00	4.80	5.00
123 } 253 } 423 } 500 }	8.88	1.10	1.34	2.44	2.00	4.26	4.16	2.82	11.24	9.00	8.42	8.00	3.46	3.00
363 } 419 }	7.51	1.18	2.05	3.23	3.28	1.38	4.84	4.76	10.98	7.00	6.22	6.00	10.59	10.00
451	7.71	.75	.63	1.38	1.20	4.09	2.72	.74	7.55	8.00	6.81	7.00	2.17	2.00
222	9.58	2.18	1.86	4.04	4.00	5.31	1.57	.97	7.85	8.00	6.88	7.00	6.00	6.00
211	5.72	1.57	.98	2.55	2.47	4.00	2.60	.82	7.42	—	6.60	6.00	9.66	10.00
182 } 189 }	8.66	1.53	1.10	2.63	2.46	4.61	3.89	1.04	9.54	9.00	8.50	8.00	6.32	6.00
278	12.92	1.83	1.62	3.45	3.00	4.45	3.25	1.82	9.52	7.00	7.70	—	7.22	7.00
275	8.90	3.52	.46	3.98	3.30	1.38	4.89	4.02	10.29	14.00	6.27	4.00	6.90	7.00
277	10.48	2.47	1.65	4.12	3.50	5.60	3.58	3.38	12.56	12.00	9.18	8.00	6.92	7.00
304	3.41	4.63	.53	5.16	4.00	4.67	3.65	4.96	13.28	12.00	8.32	6.50	4.61*	4.50
301	10.20	2.48	2.79	5.27	4.50	—	1.49	7.11	8.60	8.00	1.49	.75	.18	.25

† 316 Potash as nitrate, valued at 5c per lb.

* 455 Chlorine 1.76%, equivalent to 2.35% potash, 7.29% potash as sulphate.

137 " 2.18% " 2.93% " 2.67% " "

304 " 2.60% " 3.48% " 1.13% " "

† Ellis-Chalmers Co., Dedham, Mass., (Successors).

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
317	8.55	3.07	1.31	4.38	4.00	2.24	7.64	1.33	11.21	6.50	9.38	6.00	5.85*	4.00
319	31.50	3.52	—	3.52	3.25	3.66	—	—	3.66	2.66	3.66	2.66	3.20	3.30
416 / 514 }	14.50	1.11	.94	2.05	1.65	4.32	4.69	2.35	11.36	9.00	9.01	8.00	4.40	3.00
561	14.41	1.39	.92	2.31	2.06	5.44	3.64	1.15	10.23	10.00	9.08	8.00	3.46*	3.00
293 / 432 }	12.48	1.30	.72	2.02	1.24	6.83	2.10	1.87	10.85	11.00	8.98	9.00	2.19	2.00
297	11.40	2.35	1.03	3.38	3.39	3.75	2.42	2.53	8.70	7.00	6.17	6.00	9.54	10.00
565	10.88	1.00	1.22	2.22	1.65	6.08	3.36	2.15	11.59	10.00	9.44	8.00	9.56	10.00
160	15.22	2.14	1.50	3.64	3.30	5.12	2.74	1.97	9.83	9.00	7.86	8.00	7.02	7.00
253 / 512 }	14.60	.40	1.63	2.03	1.65	5.22	2.95	2.25	10.42	9.00	8.17	8.00	3.30	3.00
7	5.91	2.44	.73	3.17	3.50	.29	6.46	3.38	10.13	10.00	6.75	6.75	5.64	5.50
210	9.13	3.29	.09	3.38	2.47	1.51	2.07	1.28	4.86	3.50	3.58	—	3.24	2.50
152 / 246 / 374 / 526 }	9.67	3.55	.43	3.98	3.30	1.47	6.07	2.44	9.98	10.00	7.54	8.00	7.12*	6.00
208 / 262 / 365 / 391 }	7.72	4.04	.49	4.53	4.94	.55	6.05	1.10	7.70	6.00	6.60	5.00	8.22	7.00
212 / 259 / 386 }	10.47	3.21	.49	3.70	3.29	1.09	8.14	1.59	10.82	10.00	9.23	8.00	4.42	4.00
200 / 362 / 372 }	6.61	2.69	.67	3.36	3.29	.68	5.34	1.38	7.40	6.00	6.02	4.00	8.40*	8.00

* 317 Chlorine .16%, equivalent to .22% potash, 5.63% potash as sulphate.
 561 " .78% " 1.06% " 2.46%
 152-246-374-526 " .41% " .55% " 6.57%
 200-362-372 " .31% " .42% " 7.98%

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	—			
Mapes Formula and Peruvian Guano Co. (Continued.)						
Mapes' Fruit and Vine Manure	Taunton . . . } Worcester . . . }	\$3.55	—	\$43.00 } 44.00 }	\$25.83	68.41
Mapes' Corn Manure	Fitchburg . . .	.51	—	38.00	24.37	55.92
Mapes' Cereal Brand	Taunton . . . } Fitchburg . . . } Pittsfield . . . }	1.54	—	32.00 } 32.00 } 33.00 }	18.86	71.42
Mapes' Vegetable Manure for Light Soils	Taunton . . .	3.08	—	45.00	34.71	29.64
Mapes' Average Soil Complete Manure	Worcester . . . } Fitchburg . . . }	3.23 ³	—	39.00 } 39.00 }	28.98	34.57
Mapes' Tobacco Starter, Imp.	Southwick . .	3.30	—	36.00	28.30	27.20
Mapes' Cauliflower and Cabbage Manure	Fitchburg . .	1.07 ⁴	—	41.00	28.90	41.96
Mapes' Tobacco Manure, Wrapper Brand	Deerfield . .	—	\$.79 ⁴	49.00	38.28	28.00
Mapes' Tobacco Ash Constituents	Southwick . .	1.17	—	35.00	29.70	17.84
Mapes' Complete Manure, "A" Brand	Springfield .	1.50	—	38.00	24.16	57.23
Mapes' Top Dresser, Improved Half Strength	Southwick . .	.23 ³	—	35.00	23.22	50.73
Mapes' Top Dresser, Improved Full Strength	Springfield .	.41 ²	—	55.00	46.15	19.17
National Fertilizer Co., Bridgeport, Conn.						
Chittenden's Market Garden Fertilizer	Sunderland . .	1.61	—	32.00	24.15	32.50
Chittenden's Conn. Valley Tobacco Grower	Sunderland . .	2.10 ³	—	46.00	34.42	33.64
Chittenden's Conn. Valley Tobacco Starter	Sunderland . .	2.17 ³	—	46.00	39.35	16.90
Chittenden's Complete Root Fertilizer	Seekonk . . . } Leominster . . . }	1.69	—	36.00 } 39.00 }	28.23	32.83
Chittenden's Universal Phosphate	Gt. Barrington	3.79 ³	—	27.00	15.09	78.92
Chittenden's Fish and Potash	W. Springfield	1.87	—	28.00	25.21	11.06
Chittenden's XXX Fish and Potash	East Whately	3.14 ²	—	29.00	21.34	35.89
Chittenden's Complete Grass Fertilizer	East Whately	1.43 ²	—	37.00	27.59	34.10
Chittenden's Complete Fertilizer	Sunderland . .	1.89 ³	—	35.00	28.44	23.06
Chittenden's Complete Fertilizer (Tobacco)	W. Spring'd } Hatfield . . . }	1.93 ²	—	36.00 } 36.00 }	28.91 } 30.17 }	24.52 } 19.32 }
Chittenden's Ammoniated Bone Phosphate	Leominster . .	2.21	—	32.00	17.98	77.97

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
207 } 381 }	11.73	1.72	.49	2.21	1.65	1.02	5.43	.97	7.42	7.00	6.45	5.00	11.22*	10.00
393	8.64	2.17	.47	2.64	2.47	.68	7.43	2.43	10.54	10.00	8.11	8.00	7.14	6.00
161 } 377 } 533 }	11.49	1.73	.57	2.30	1.65	.38	5.17	4.30	9.85	8.00	5.55	6.00	3.96	3.00
206	8.31	4.65	.65	5.30	4.94	.90	6.29	1.51	8.70	8.00	7.19	6.00	7.76	6.00
364 } 378 }	10.67	3.80	.37	4.17	4.12	1.92	5.65	.95	8.52	8.00	7.57	7.00	6.12*	5.00
483	7.44	4.39	.83	5.22	4.12	.45	5.82	.97	7.24	8.00	6.27	6.00	2.68*	1.00
394	8.59	3.95	.55	4.50	4.12	1.60	4.37	1.30	7.27	6.00	5.97	6.00	7.03	6.00
554	9.17	3.54	2.51	6.05	6.18	.29	3.58	1.66	5.53	4.50	3.87	—	10.96*	10.50
463	11.64	.58	.12	.70	.50	.23	2.56	3.58	6.37	5.70	2.79	—	15.10†	15.00
494	10.04	2.52	.48	3.00	2.47	1.25	8.93	2.89	13.07	12.00	10.18	10.00	2.85	2.50
466	6.83	4.68	.17	4.85	4.94	.32	2.42	1.48	4.22	4.00	2.74	—	2.11†	2.00
491	9.01	9.17	.41	9.58	9.88	.49	6.37	1.15	8.01	8.00	6.86	—	4.03*	4.00
53	10.91	1.87	.70	2.57	2.47	6.50	2.04	1.46	10.00	9.00	8.54	7.00	6.40	6.00
30	7.56	2.23	2.52	4.75	4.20	.38	2.71	1.77	4.86	4.00	3.09	—	8.72†	8.00
76	5.99	6.50	2.34	8.84	8.25	—	2.79	.79	3.58	3.00	2.79	—	2.96*	2.50
153 } 420 }	12.62	1.97	1.58	3.55	3.30	4.73	3.44	2.17	10.34	10.00	8.17	8.00	6.78	6.00
527	11.70	.56	.70	1.26	.80	4.32	4.40	1.87	10.59	10.00	8.72	8.00	1.32	1.00
93	11.46	2.49	1.10	3.59	3.00	5.73	1.20	1.13	8.06	6.00	6.93	—	4.98	4.00
66	11.91	1.68	1.43	3.11	2.50	4.32	1.11	1.13	6.56	7.00	5.43	5.00	4.10	3.00
67	11.61	2.30	1.54	3.84	4.10	5.76	1.59	1.30	8.65	8.00	7.35	6.00	5.95	5.00
57	8.24	2.17	1.38	3.55	3.29	7.39	1.49	1.38	10.26	9.00	8.88	8.00	5.58*	5.00
92	7.57	1.85	1.76	3.61	3.29	7.14	1.18	1.84	10.16	9.00	8.32	8.00	6.06*	5.00
128	8.84	2.89	1.18	4.07	3.29	7.52	1.26	1.05	9.83	9.00	8.78	8.00	5.66*	5.00
421	12.98	1.39	.49	1.88	1.65	6.08	2.21	2.15	10.44	10.00	8.29	8.00	2.24	2.00

* 207-381 Chlorine .28% equivalent to .37% potash, 10.85% potash as sulphate.

364-378 " .57% " .76% " 5.36% " "

483 " .47% " .64% " 2.04% " "

554 " 1.17% " 1.57% " 9.39% " "

491 " .84% " 1.13% " 2.90% " "

76 " .33% " .46% " 2.50% " "

57 " .53% " .71% " 4.87% " "

92 " .86% " 1.04% " 5.02% " "

128 " .43% " .58% " 5.08% " "

† 463 Total potash 15.84% Chlorine 1.16% equivalent to 1.55% potash, 3.16% potash as sulphate,

30 Total potash 8.80% Chlorine 1.13% potash as carbonate.

‡ Potash as sulphate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	-			
National Fertilizer Co. (Continued).						
Chittenden's Potato Phosphate	West Auburn .	\$1.12	—	\$34.00	\$24.28	40.03
Chittenden's Tobacco Special	S. Deerfield } E. Whately . }	2.88 ²	—	35.00 } 35.00 }	30.89	13.30
National Guano Co., Aurora, Ill.						
Pulverized Sheep Manure	Worcester . .	—	—	25.00	12.73	99.52
New England Fertilizer Co., Boston, Mass.						
New England High Grade Potato Fertilizer	So. Lowell . .	2.34 ⁴	—	34.00	24.59	38.26
New England Superphosphate	So. Lowell } Orange . . }	.86	—	32.00 } — }	22.63	41.40
New England Potato Grower	So. Lowell . .	—	—	37.00	25.82	43.29
New England Corn and Grain Fertilizer	So. Lowell } Orange . . }	1.81 ²	—	26.00 } 25.00 }	16.47	54.82
New England Potato Fertilizer	So. Lowell . .	.91	—	30.00	18.12	65.56
New England Market Garden Manure	So. Lowell . .	—	—	38.00	29.46	28.98
Northwestern Fertilizing Co., Chicago, Ill.						
Northwestern Empire Special Manure	Seekonk . . .	—	—	34.00	29.21	16.39
Olds & Whipple, Hartford, Conn.						
Olds & Whipple's Tobacco Fertilizer	N. Hadley . }	2.50	—	36.00	31.12	15.68
" " "	N. Amherst }			36.00	30.73	17.15
" " "	Sunderland }			36.00		
" " "	N. Hadley }			36.00		
High Grade Potato Manure	N. Amherst . .	—	—	37.00	32.26	14.69
Home Mixture for Onions	N. Amherst } Bradstreet . }	2.39 ²	—	34.00 } 37.00 }	27.88 } 27.96 }	21.95 } 32.33 }
Home Mixture for Grass	N. Amherst . .	—	—	34.00	26.66	27.53
Home Mixture for Corn and Potatoes	M'f'rs Sample	1.54 ²	—	34.00	26.19	29.87
Fish and Potash	S. Deerfield . } M'f'rs Samp. }	—	—	30.00 } 30.00 }	20.52	46.19
Parmenter & Polsey Fertilizer Co., Boston, Mass.						
A. A. Brand	So. Lowell . .	.26 ⁴	—	42.00	28.84	45.64

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.							Potash (K ₂ O) in 100 lbs.	
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
566	13.87	1.16	1.20	2.36	2.06	7.33	1.62	1.46	10.41	10.00	8.95	8.00	6.70	6.00
56 } 68 }	8.21	1.84	3.29	5.13	4.00	—	3.47	3.18	6.65	4.00	3.47	3.00	4.96*	5.50
384	4.93	—	2.25	2.25	2.50	1.70	—	—	1.70	1.75	1.70	1.50	1.80	1.50
272	8.68	1.27	1.55	2.82	2.46	6.65	1.36	1.23	9.24	9.00	8.01	8.00	6.08	6.00
234 } 456 }	8.23	1.48	1.27	2.75	2.46	4.99	3.33	1.33	9.65	10.00	8.32	8.00	4.02	4.00
256	7.61	2.05	.72	2.77	2.46	4.39	2.04	1.07	7.50	7.00	6.43	6.00	10.14	10.00
258 } 454 }	8.36	1.03	.78	1.81	1.23	5.03	2.50	.69	8.22	8.00	7.53	7.00	2.24	2.00
265	9.16	.31	1.60	1.91	1.64	3.88	3.28	.41	7.57	8.00	7.16	7.00	4.02	4.00
252	8.06	2.83	1.50	4.33	4.94	4.22	2.92	1.51	8.65	8.00	7.14	7.00	6.34	6.00
176	12.06	2.01	1.77	3.78	3.30	5.82	2.24	2.15	10.21	9.00	8.06	7.00	6.84	7.00
5 } 13 } 27 } 105 }	7.89	2.18	2.66	4.84	4.53	.29	3.25	.70	4.24	—	3.54	3.00	6.72*	5.50
	7.48	4.21	1.34	5.55	4.53	—	3.08	.52	3.60	—	3.08	3.00	5.50*	5.50
15	6.79	.77	3.26	4.03	3.29	.17	6.46	3.30	9.93	6.00	6.63	—	10.28	10.00
20 } 74 }	7.98	2.10	1.84	3.94	3.30	—	6.40	2.50	8.90	—	6.40	6.00	6.84	6.50
	7.55	1.18	2.49	3.67	3.30	—	6.35	2.50	8.85	—	6.35	6.00	7.84	6.50
36	7.18	1.82	1.94	3.76	3.30	.13	5.63	2.79	8.55	—	5.76	6.00	6.66	6.00
548	5.05	2.15	1.50	3.65	3.30	.83	5.04	3.14	9.01	—	5.87	6.00	5.62*	6.00
543 } 552 }	6.53	.36	2.28	2.64	2.50	.19	4.78	4.96	9.93	—	4.97	5.00	3.96	3.00
271	10.14	2.35	1.82	4.17	4.12	4.93	2.36	.82	8.11	8.00	7.29	7.00	6.24	8.00

* 56-68 Chlorine 1.73%, equivalent to 2.31% potash, 2.65% potash as carbonate.

5 " 1.15% " 1.53% " 5.19% sulphate.
 13-27-105 " .94% " 1.26% " 1.96% " 2.33% potash as carbonate.
 548 " .91% " 1.22% " 4.40% " " "

High Grade Corn and Onion Fertilizer	Sunderland . }	.78 ³	—	36.00	29.20	23.28
" " " " " " " " " " " " " " " " " " " "	Fitchburg . }			37.00	28.24	31.02

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
266	8.36	1.29	1.45	2.74	1.65	4.32	2.98	.92	8.22	7.00	7.30	6.00	6.88	6.00
417 } 468 }	7.98	1.92	1.20	3.12	3.28	5.09	3.92	.92	9.93	9.00	9.01	8.00	6.62	7.00
267 } 412 } 476 }	8.41	1.72	1.00	2.72	2.47	4.13	4.16	1.79	10.08	9.00	8.29	8.00	4.58	4.00
495	10.66	1.59	1.12	2.71	2.88	6.88	1.87	.69	9.44	10.00	8.75	8.00	8.42*	8.00
490	8.71	4.07	1.37	5.44	5.76	5.86	1.10	.41	7.37	8.00	6.96	6.00	8.58*	8.00
492	9.46	2.00	.96	2.96	2.88	7.52	1.46	.46	9.44	10.00	8.98	8.00	10.14*	10.00
418 } 426 }	6.75	—	2.15	2.15	2.10	—	—	—	1.54	1.20	—	—	1.64	1.35
239	5.27	3.19	—	3.19	1.65	1.45	5.84	1.74	9.03	9.00	7.29	8.00	2.86	2.00
236	5.07	3.43	.10	3.53	3.29	1.51	4.37	1.46	7.34	5.00	5.88	4.00	4.88	5.00
237	10.20	—	2.50	2.50	2.50	—	—	—	1.37	—	1.37	1.20	2.04	1.50
102 } 375 } 389 }	9.45	1.99	.51	2.50	2.25	6.65	2.67	1.48	10.80	10.00	9.32	—	4.16	5.00
	9.49	1.58	.99	2.57	2.25	5.37	3.20	2.48	11.05	10.00	8.57	8.00	4.28	5.00
21 } 28 }	7.47	2.85	2.51	5.36	5.00	.68	7.00	3.30	10.98	8.00	7.68	6.00	11.56*	11.00
116	6.34	3.03	2.21	5.24	5.00	1.60	5.82	3.61	11.03	8.00	7.42	6.00	11.86*	11.00
370 } 538 }	6.79	2.69	2.32	5.01	5.00	.97	6.78	2.94	10.59	8.00	7.65	6.00	11.52*	11.00
539	7.65	.82	2.94	3.76	3.25	2.24	2.21	2.02	6.47	6.00	4.45	4.00	3.32	3.75
22 } 33 }	8.92	4.73	1.64	6.37	6.30	.87	8.03	3.18	12.08	9.00	8.90	7.00	6.72	7.50
376	9.45	4.15	2.10	6.25	6.30	.23	8.42	3.35	12.00	9.00	8.65	7.00	6.06	7.50
361	9.01	1.85	.42	2.27	1.65	6.08	3.15	1.59	10.82	10.00	9.23	8.00	1.44	2.00
38 } 395 }	7.59	2.68	1.36	4.04	3.60	3.56	3.17	3.43	10.16	8.00	6.73	6.00	6.96	7.00
	10.00	.60	3.48	4.08	3.80	2.34	3.31	2.05	7.70	8.00	5.65	6.00	6.60	7.00

* 495 Chlorine 4.87% equivalent to 6.52% potash, 1.90% potash as sulphate.

490 " 4.70% " 6.31% " 2.27% " "

492 " .25% " .35% " 9.79% " "

21-28 " .61% " .81% " 10.75% " "

116 " .38% " .51% " 11.35% " "

370-538 " .48% " .65% " 10.87% " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	-			
Rogers Manufacturing Co. (Continued).						
High Grade Soluble Tobacco and Potato	Mansfield . .	\$2.80 ²	—	\$42.00	\$33.41	25.73
High Grade Grass and Grain for Seeding Down . . .	Fitchburg . .	.49 ²	—	41.00	35.97	13.08
Rogers & Hubbard Co., Middletown, Conn.						
Hubbard's Soluble Potato Manure	Whately . . .	2.03	—	43.00	38.14	12.74
Hubbard's Potato Phosphate	Whately . . . } Gt. Barrington }	2.01	—	33.00† 35.00	23.25 23.85	41.91 38.37
Hubbard's Oats and Top Dressing	Taunton . . . } E. Longm'w }	2.49	—	54.00 } 59.00 }	51.21	10.33
Hubbard's Soluble Tobacco Manure	Whately . . .	2.57 ²	—	48.00	40.12	19.64
Hubbard's Soluble Corn and General Crops	Whately . . .	1.96	—	37.00	25.36	45.90
Hubbard's Complete Phosphate	Gt. Barrington } Amherst }	2.42 ⁴	—	28.00 } 28.00 }	18.27	53.25
Hubbard's Fruit or Grass and Grain Fertilizer	Seekonk . . .	2.89	—	44.00	33.53	31.22
Ross Bros. Co., Worcester, Mass.						
Ross' Lawn and Garden Fertilizer	Worcester . .	—	\$.62	38.00	18.53	105.07
N. Roy & Son, South Attleboro, Mass.						
Roy's Animal Fertilizer	M'f'rs Sample	—	2.64 ⁴	32.00	33.08	43.23
Sanderson Fert. and Chem. Co., New Haven, Conn.						
Sanderson's Tobacco Formula "B."	Sunderland . .	1.30	—	32.30	27.68	16.69
" "						

† Price given by manufacturer.

‡ Valuation in excess of selling price.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.							Potash (K ₂ O) in 100 lbs.	
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
563	8.22	1.79	2.25	4.04	3.50	.13	7.21	4.89	12.23	9.00	7.34	7.00	9.06*	8.75
371	7.76	.31	2.60	2.91	3.00	.26	10.43	8.14	18.83	16.00	10.69	—	13.24	12.50
121	9.12	4.56	1.29	5.85	5.00	.23	8.91	4.22	13.36	10.00	9.14	7.00	6.08*	5.00
123	10.68	1.23	.87	2.10	2.00	5.48	4.06	2.79	12.33	10.00	9.54	9.00	5.74	5.00
531	8.90	1.02	1.28	2.30	2.00	3.39	6.13	4.63	14.15	10.00	9.52	9.00	4.79	5.00
229 } 473 }	3.78	8.76	1.13	9.89	8.50	.26	5.47	3.48	9.21	8.00	5.73	3.90	8.94	8.00
545	7.70	3.31	2.02	5.33	5.00	.64	7.34	4.84	12.82	10.00	7.98	7.00	10.46*	10.00
111	6.33	1.87	.88	2.75	2.50	2.17	4.30	2.41	8.88	8.00	6.47	6.00	9.21	8.00
532 } 562 }	10.24	.77	.70	1.47	1.00	4.54	4.59	1.41	10.54	9.00	9.13	8.00	3.90	3.50
178	6.35	.73	2.42	3.15	2.20	—	9.46	6.12	15.58	16.00	9.46	9.00	11.70	12.00
385	8.17	1.86	.76	2.62	2.50	—	3.74	2.43	6.17	6.00	3.74	—	4.54*	5.50
322	4.08	1.65	2.53	4.18	5.42	.29	10.56	9.29	20.14	16.20	10.85	8.14	3.64	4.16
29	8.48	1.52	2.09	3.61	3.33	4.29	2.56	2.69	9.54	10.00	6.85	6.00	6.02*	6.00
65	8.95	1.80	1.89	3.69	3.33	4.00	3.22	2.76	9.98	10.00	7.22	6.00	6.16*	6.00
107	8.09	1.70	2.09	3.79	3.33	3.68	3.36	3.17	10.21	10.00	7.04	6.00	6.14*	6.00
452	9.01	1.56	2.18	3.74	3.33	3.80	2.98	3.28	10.06	10.00	6.78	6.00	6.06*	6.00
614	8.60	1.93	1.62	3.55	4.00	1.09	4.59	3.40	9.08	—	5.68	7.00	6.62	7.00
35	8.13	1.59	1.83	3.42	3.30	4.41	2.60	2.35	9.36	9.00	7.01	6.00	6.28	6.00
71 }	8.26	1.82	1.73	3.55	3.30	4.26	2.63	2.94	9.83	9.00	6.89	6.00	6.56	6.00
140 }	9.35	1.89	1.29	3.18	3.30	1.06	4.96	3.04	9.06	9.00	6.02	6.00	6.62	6.00
453 }														
535	7.57	.63	1.74	2.37	2.47	1.22	4.10	.56	5.88	8.00	5.32	5.00	9.54*	10.00
523	10.56	.62	1.22	1.84	1.67	3.17	4.91	2.23	10.31	9.00	8.08	7.00	2.24	2.00
169 }														
434 }	8.50	.48	1.28	1.76	1.67	1.83	3.07	2.12	7.02	6.00	4.90	4.00	5.08	4.00
521 }														

* 563 Chlorine .39%, equivalent to .52% potash, 8.54% potash as sulphate.

121	.20%	.26%	5.59%	“	“
545	.31%	.41%	10.05%	“	“
385	1.74%	2.32%	2.22%	“	“
29	.99%	1.32%	4.70%	“	“
65	.79%	1.05%	5.11%	“	“
107	.70%	.93%	5.21%	“	“
452	.57%	.76%	3.30%	“	“
535	1.83%	2.45%	7.09%	“	“

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	—			
Sanderson Fertilizer and Chemical Co. (Continued).						
Walker's Complete Phosphate	Dighton . . .	\$1.96 ³	—	\$25.50	\$17.82	43.09
Sanderson's Old Reliable Superphosphate	Ringville . .	2.03 ²	—	30.00	20.15	48.88
M. L. Shoemaker & Co., Philadelphia, Pa.						
"Swift-Sure" Superphosphate for General Use	Sunderland . }	2.92	—	33.00	30.00	10.00
	Hatfield . . }			36.00	28.91	24.52
" Guano for Truck, Corn and Onions	Sunderland . .	—	—	29.50	24.74	19.24
Smith Agricultural Chemical Co., Columbus, Ohio.						
Abbott's Tobacco and Potato Special	Townsend . .	1.75	—	30.00	22.31	34.46
Truck Guano	Sunderland . }	—	\$.03 ²	39.00	27.60	41.30
	Townsend . }			36.00	31.56	14.06
Harvest King	Townsend . .	1.35	—	27.00	18.55	45.56
Hardy's Potato Grower	Concord . . .	—	.68 ²	32.00	23.74	34.79
Hardy's Tobacco and Potato Special	Westport . . }	.70	—	31.00	23.05	38.84
" " " " " "	Concord . . }			32.00		
" " " " " "	Bridgewater }			33.00		
Hardy's Potato and Tobacco Special	Sunderland . .	—	—	34.00	24.15	40.78
Hardy's Tankage, Bone and Potash	Concord . . }	.67	—	30.00	16.26	90.65
	Newburyport }			32.00		
Swift's Lowell Fert. Co., 40 N. Market St., Boston.						
Swift's Superior Fertilizer with 10% Potash	Seekonk . . .	.64 ⁴	—	42.00	30.74	36.62
Swift's Lowell Animal Brand for all Crops	Sunderland . }	.84	—	29.00	23.32	24.35
" " " " " "	Springfield . }			32.00	23.40	37.47
" " " " " "	N. Westport }			34.00		
" " " " " "	Somerset . }			30.50		
Swift's Special Vegetable Manure	Amherst . . .	2.00 ⁴	—	40.00	29.72	34.59
Swift's Lowell Market Garden Manure	Taunton . . }	1.04	—	37.00	29.00	32.75
	Seekonk . . }			40.00		
Swift's Lowell Potato Phosphate	Springfield . }	.88	—	34.00	23.28	50.34
	N. Westport }			36.00		
Swift's Lowell Lawn Dressing	Concord . . }	.65	—	45.00	28.34	58.73
	Lexington . }			45.00		
Swift's Lowell Special Grass Mixture	Lexington . .	1.50 ³	—	39.00	29.36	32.85

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
139	9.65	.63	1.16	1.79	1.67	3.94	3.71	3.10	10.75	10.00	7.65	7.00	2.60	2.00
613	8.60	.88	1.57	2.45	2.50	1.60	7.41	.61	9.62	10.00	9.01	7.00	2.28	2.00
60	9.40	2.31	1.03	3.34	2.88	8.61	2.19	2.56	13.36	—	10.80	8.00	5.71*	4.50
109	9.69	2.15	1.30	3.45	2.88	6.43	3.69	3.24	13.36	—	10.12	8.00	4.66*	4.50
62	11.95	1.50	.82	2.32	1.65	7.48	2.25	2.58	12.31	—	9.73	8.00	6.22	5.00
594	12.92	.36	1.85	2.21	1.65	5.82	3.24	.46	9.52	10.00	9.06	8.00	5.26	4.00
64	11.93	.96	2.79	3.48	3.30	4.90	3.42	.92	9.24	10.00	8.32	8.00	6.19	7.00
586	11.29	.25	4.10	4.35	3.30	5.63	2.59	.15	8.37	10.00	8.22	8.00	6.82	7.00
589	10.90	.45	1.34	1.79	1.20	2.92	5.88	1.00	9.80	10.00	8.80	8.00	3.22	2.00
306	14.52	1.13	.67	1.80	1.20	5.50	4.17	.56	10.23	10.00	9.67	8.00	8.64	10.00
168 } 238 } 347 }	14.50	.83	1.65	2.48	1.65	5.03	3.69	1.36	10.08	10.00	8.72	8.00	5.08	4.00
542	15.08	.66	1.81	2.47	1.65	5.99	3.53	.64	10.16	10.00	9.52	8.00	5.72	4.00
303 } 331 }	12.20	.50	.81	1.31	1.24	3.86	5.20	1.74	10.80	10.00	9.06	8.00	2.18	2.00
187	8.99	2.30	1.47	3.77	3.65	3.99	3.65	1.04	8.68	8.00	7.64	7.00	10.00	10.00
32 } 97 }	8.60	1.11	1.46	2.57	2.46	4.41	4.64	2.41	11.46	10.00	9.05	8.00	4.32	4.00
171 } 213 }	7.67	1.51	1.37	2.88	2.46	5.12	3.04	1.84	10.00	10.00	8.16	8.00	4.22	4.00
575	10.84	2.36	1.56	3.92	3.29	4.67	4.82	.90	10.39	9.00	9.49	8.00	6.14	7.00
145 } 175 }	8.61	2.64	1.55	4.19	4.10	4.93	2.44	1.46	8.83	8.00	7.37	7.00	6.08	6.00
94 } 157 }	7.10	1.46	1.15	2.61	2.46	4.32	2.95	1.79	9.06	9.00	7.27	8.00	6.42	6.00
298 } 349 }	10.31	2.21	1.80	4.01	4.10	4.96	2.51	.92	8.39	8.00	7.47	7.00	6.10	6.00
355	9.11	2.09	1.97	4.06	4.11	4.64	3.65	.69	8.98	8.00	8.29	7.00	6.28	6.00

* 60 Chlorine .40%, equivalent to .54% potash, 5.17% potash as sulphate.
 109 " .40% " .62% " 4.04% "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand..	Where Sampled.	Average Value for 5 years of the excess or deficiency of plant food over the amount guaranteed.		Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
		+	-			
Swift's Lowell Fertilizer Co. (Continued).						
Swift's Lowell Dissolved Bone and Potash	N. Westport	\$.67	—	\$31.00	\$19.29	60.70
Swift's Lowell Potato Manure	N. Westport	1.93	—	32.00	18.18	76.01
Swift's Lowell Potato Grower	Concord . . . . .	.33 ²	—	36.00	27.32	31.77
Swift's Lowell Empress Brand for Corn and Potatoes	Spencer	1.73	—	28.00	16.54	69.28
Swift's Lowell Bone Fertilizer for Corn and Grain . .	S. Lowell	1.40	—	30.00	18.96	53.79
" " " " " " " "	Spencer } Sunderland . }			30.00 } 27.50 }		
Whitman & Pratt Rendering Co., Lowell, Mass.						
Whitman & Pratt's Corn Success	M'f'rs Sample	2.49 ⁴	—	27.50	19.85	38.53
Whitman & Pratt's Vegetable Grower	Seekonk	2.44 ⁴	—	36.00	29.80	21.65
	N. Chelmsf'd			36.50		
Whitman & Pratt's Potash Special	N. Chelmsford	1.31 ²	—	36.50	29.59	23.35
Whitman & Pratt's Potato Plowman	N. Chelmsford	1.59 ⁴	—	36.50	28.39	28.56
Wilcox Fertilizer Works, Mystic, Conn.						
Wilcox's Fish and Potash	Amherst	2.82	—	28.00	21.07	32.89
	New Bedford			30.00	20.15	48.88
Wilcox's Potato, Onion and Vegetable Manure	Amherst	3.34	—	36.00	29.57	21.74
	New Bedford			36.00	29.82	20.72
Wilcox's H. G. Tobacco Special	Amherst	4.31 ⁴	—	36.00	29.88	20.48
	Fall River			37.00	29.80	24.16
Wilcox's Potato Fertilizer	Amherst	3.58	—	30.00	20.96	43.13
Wilcox's Grass Fertilizer	S. Deerfield	2.86 ³	—	35.00	30.63	16.97
" " " " " " " "	Seekonk			36.00		
" " " " " " " "	Fall River			36.50		
A. H. Wood & Co., Framingham, Mass.						
B. B. Brand General Fertilizer	Framingham	3.33 ³	—	30.00	27.14	10.54
Wunsch Manufacturing Co., Pawtucket, R. I.						
New England Standard	Dighton	—	—	32.00	24.40	31.14
Superior Brand	Dighton	—	—	36.50	29.03	25.75
Potato Special	Dighton	—	—	30.00	25.54	17.46

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
144	8.88	1.24	.81	2.05	1.65	5.50	3.78	1.34	10.62	10.00	9.28	10.00	2.28	2.00
195	8.82	1.20	.71	1.91	1.64	3.24	4.64	.20	8.08	8.00	7.88	7.00	3.92	4.00
313	7.82	1.87	1.38	3.25	3.20	3.68	2.95	.38	7.01	7.00	6.63	6.00	9.70	10.00
411	8.66	1.12	.63	1.75	1.23	4.45	3.53	.69	8.72	8.00	8.03	7.00	2.20	2.00
255 } 415 } 556 }	8.89	1.15	.91	2.06	1.64	4.90	3.26	1.18	9.34	9.00	8.16	8.00	3.14	3.00
392	10.62	1.05	.96	2.01	1.64	4.64	4.29	1.89	10.82	10.00	8.93	8.00	3.24	3.00
143 } 367 }	9.97	1.92	1.54	3.46	3.29	4.54	4.69	2.51	11.74	10.00	9.23	8.00	7.80	7.00
403	8.51	2.05	1.11	3.16	2.88	2.66	4.58	2.00	9.24	8.00	7.24	6.00	10.00*	10.00
406	8.16	.60	2.87	3.47	3.20	1.28	6.68	2.48	10.44	10.00	7.96	8.00	7.10*	7.00
43 } 135 }	16.11 17.09	.93 .85	1.96 1.97	2.89 2.82	2.46 2.46	2.21 1.73	3.34 3.54	2.71 2.35	8.26 7.62	6.00 6.00	5.55 5.27	5.00 5.00	3.87 3.60	3.00 3.00
41 } 154 }	11.92 13.44	2.01 2.07	1.78 1.68	3.79 3.75	3.30 3.30	2.11 5.73	6.26 2.69	1.15 1.74	9.52 10.16	8.00 8.00	8.37 8.42	7.00 7.00	7.46* 7.12*	6.00 6.00
50 } 134 }	7.76 6.24	1.69 1.58	2.23 2.16	3.92 3.74	3.30 3.30	.10 —	5.86 6.27	2.58 3.71	8.54 9.93	7.00 7.00	5.96 6.27	5.00 5.00	8.18* 7.98†	7.00 7.00
45	15.72	1.19	1.41	2.60	2.05	.33	4.93	2.90	8.16	7.00	5.26	6.00	5.40*	4.50
58 } 155 } 165 }	8.60	2.70	1.74	4.44	4.11	3.01	4.03	2.86	9.90	10.00	7.04	6.00	6.30*	5.00
436	6.94	1.25	1.93	3.18	2.47	1.85	6.51	3.97	12.33	11.00	8.36	7.00	6.24	5.00
172	14.89	1.33	1.68	3.01	2.47	.19	8.12	2.46	10.77	—	8.31	8.00	4.84	4.00
180	12.31	1.72	1.59	3.31	3.29	.19	7.97	2.04	10.20	9.00	8.16	8.00	9.38	7.00
190	15.01	1.83	1.71	3.54	1.65	.06	6.94	3.24	10.24	7.00	7.00	6.00	4.88	6.00

* 403 Chlorine .63%, equivalent to .84% potash, 9.16% potash as sulphate.

406 " 4.89% " 6.54% " .56% " "

41 " 4.11% " 5.51% " 1.95% " "

154 " 3.49% " 4.66% " 2.46% " "

50 " .44% " 4.59% " 7.59% " "

45 " 2.72% " 3.64% " 1.70% " "

58-155-165 " 2.81% " 3.77% " 2.53% " "

† 134 Potash in form of sulphate.

Fertilizers Furnishing Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
DISSOLVED PHOSPHATES AND POTASH.				
American Agric. Chem. Co., 92 State St., Boston, Mass.				
Packers' Union Wheat, Oats and Clover Fertilizer . . .	Great Barrington	\$22.00	\$13.46	63.44
Wheeler's Grass and Oats Fertilizer	Danvers	—		
Lister's Agricultural Chemical Works, Newark, N. J.				
Lister's Grain and Grass Fertilizer	Williamstown . .	25.00	12.83	94.85
WOOD ASHES.				
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Pure Unleached Hard Wood Ashes	Boston	16.00	9.78	63.65
Canada Hard Wood Ashes	Taunton	16.00	6.98	129.23
John Joynt, Lucknow, Ontario, Canada.				
Pure Hard Wood Ashes	Amherst	10.50	8.80	19.31
" " " "	North Hadley . .	10.50	7.58	38.52
" " " "	Sunderland	12.00	10.58	13.42
" " " "	Lexington	17.00	8.05	111.18
OTHER BRANDS.				
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Bowker's Tobacco Ash Constituents	Southwick	33.00	23.15	42.53
" " " "	South Deerfield .	33.00		
F. E. Fogg, Shawmut, Mass.				
Fogg's Fertilizer	Manufac'rs Sample	20.00	6.37	213.97

Fertilizers Furnishing Phosphoric Acid and Potash.

Laboratory Number,	Moisture.	Phosphoric Acid in 100 lbs.							Potash (K ₂ O) in 100 lbs.	
		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
					Found.	Guaranteed.	Found.	Guaranteed.		
529 } 603 }	15.35	7.16	3.97	2.02	13.15	12.00	11.13	11.00	2.26	2.00
509	10.12	3.07	7.11	2.00	12.18	11.00	10.18	10.00	1.98	2.00
247*	13.97	—	—	—	1.82	1.00	—	—	5.20	4.00
215*	9.50	—	—	—	1.20	1.00	—	—	3.76	4.00
10*	11.42	—	—	—	1.16	1.00	—	—	4.92	4.00
280*	4.64	—	—	—	1.28	1.00	—	—	4.10	4.00
37*	17.30	—	—	—	1.79	1.00	—	—	5.72	6.00
340*	13.71	—	—	—	1.59	1.00	—	—	4.24	4.00
471 } 541 }	8.62	.64	7.11	4.58	12.33	—	7.75	6.00	14.31†	15.00
451	6.48	—	.94	.31	1.25	1.00	.94	—	6.35	6.00

* 247 Calcium oxide 30.40.
 215 " " 35.48.
 10 " " 39.16.
 280 " " 37.88.
 37 " " 41.10.
 340 " " 35.79.

† Total potash 14.98. Enough soluble sulphates present to unite with all of the potash, only traces of chlorine present.

* Valuation in excess of selling price.
† Manufacturer's price.

* Valuation in excess of selling price.
† Manufacturer's price.

Fertilizers Manufactured for Private Use. (Not Licensed.)

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.						Potash (K ₂ O) in 100 lbs.		
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
493	7.53	2.77	1.72	4.49	3.75	5.88	1.26	.74	7.88	8.00	7.14	6.00	8.78*	10.00
91	.09	2.40	—	2.40	—	—	7.06	4.94	12.00	—	7.06	—	14.40*	—
11	8.72	2.09	2.70	4.79	5.00	4.80	2.39	1.56	8.75	6.00	7.19	—	5.16*	6.00
12	8.57	2.11	1.51	3.62	4.00	5.03	2.47	1.46	8.96	6.00	7.50	—	6.68*	6.00
320	11.11	3.06	1.58	4.64	5.00	3.14	4.07	2.74	9.95	—	7.21	6.00	6.57*	6.00
321	8.17	2.65	1.42	4.07	4.00	3.75	3.36	3.30	10.41	—	7.11	6.00	6.24*	6.00
147	10.47	2.43	1.83	4.31	4.12	5.68	2.66	1.46	9.80	9.00	8.34	8.00	8.34	8.00
186	13.31	1.88	1.51	3.39	3.30	6.05	2.91	.66	9.62	9.00	8.96	8.00	6.46	6.00
127	6.44	2.93	2.87	5.80	—	.32	.36	.18	.86	—	.68	—	5.46*	—
489†	16.91	—	—	—	—	—	—	—	1.02	—	—	—	2.72	—
546†	23.83	—	—	—	—	—	—	—	1.56	—	—	—	3.00	—
202	14.70	1.14	1.22	2.36	—	3.33	1.38	1.15	5.86	—	4.71	—	9.56	—
344	25.18	—	—	‡ 2.08	3.00	—	—	—	1.84	—	—	—	.24	—
330	18.61	—	—	‡ 2.31	2.50	—	—	—	1.62	—	—	—	.16	—
356	27.36	—	—	‡ 2.15	2.50	—	—	—	2.49	.25	—	—	.88	.40
570	15.05	.37	2.88	3.25	—	4.16	5.53	2.00	11.69	—	9.69	—	5.00	—
569	3.95	2.59	2.19	4.78	—	—	10.69	4.12	14.81	—	10.69	—	9.14	—
42	1.94	—	—	13.18	15.00	—	—	—	—	—	—	—	45.80	50.00
81	1.58	—	—	11.75	15.00	—	—	—	—	—	—	—	46.64	50.00
142	1.91	—	—	15.20	15.80	—	—	—	—	—	—	—	—	—

* 493 Chlorine 4.60% equivalent to 6.16% potash, 2.62% potash as sulphate.
 91 " 1.33% " 1.78% " 12.62% " "
 11 " 1.09% " 1.46% " 3.70% " "
 12 " 1.17% " 1.57% " 5.11% " "
 320 " 1.35% " 1.81% " 4.76% " "
 321 " 1.69% " 2.22% " 3.98% " "
 127 " 1.44% " 1.93% " 4.02% " "

‡ Available Nitrogen { No. 344, No. 330, No. 356, Humus { No. 344, No. 330, No. 356,
 .87 .97 1.01 20.60 24.60 16.00

† No. 489 Calcium oxide, 49.27. No. 546 Calcium oxide, 27.60.

Ground Bones, Dissolved Bones, Tankage and Dry Ground Fish.

Name of Manufacturer and Brand.	Where Sampled.	Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.
American Agric. Chem. Co., 92 State St., Boston.				
Fine Ground Bone	Amherst	\$30.00	\$26.71	12.31
Fine Ground Bone	New Bedford	30.00	26.29	13.35
" " "	Middleboro	30.00		
" " "	Boston	30.00		
" " "	Newburyport	29.00		
" " "	Framingham	30.00		
Armour Fertilizer Works, Baltimore, Md.				
Armour's Bone Meal	Haverhill	25.00	27.88	4.01
" " "	North Adams	33.00		
Beach Soap Co., Lawrence, Mass.				
Beach's Bone Fertilizer	Manufac'rs Sample	28.00	29.12	3.84*
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Bowker's Fresh Ground Bone	Bridgewater	29.00	23.49	27.71
" " "	Leominster	28.00		
" " "	Great Barrington	33.00		
John C. Dow & Co., 13-14 Chatham St., Boston, Mass.				
Dow's Pure Ground Bone	Boston	30.00	26.48	13.29
Essex Fertilizer Co., 39 N. Market St., Boston, Mass.				
Essex Ground Bone	Taunton	30.00	30.93	3.00*
Thomas Hersom & Co., New Bedford, Mass.				
Pure Bone Meal	New Bedford	25.00	28.35	11.81*
Home Soap Co., Worcester, Mass.				
Pure Ground Bone	Worcester	28.00	27.24	2.78
National Fertilizer Co., Bridgeport, Conn				
Clittenden's Fine Ground Bone	Leominster	28.00	27.95	.19
W. W. Rawson & Co., 5 Union St., Boston, Mass.				
Rawson's Fine Ground Bone	Boston	30.00	25.59	17.22
Rogers Manufacturing Co., Rockfall, Conn.				
Pure Knuckle Bone Flour	Amherst	35.00	34.91	.25
Rogers & Hubbard Co., Middletown, Conn.				
Raw Knuckle Bone Flour	Wellesley	39.00	31.43	24.08
M. L. Shoemaker & Co. (Limited), Philadelphia, Pa.				
"Swift-Sure" Bone Meal	Sunderland	33.00	37.20	11.29*
Springfield Rendering Co., Springfield, Mass.				
Ground Steamed Bone	Springfield	25.00	30.05	16.80*
T. L. Stetson, Randolph, Mass.				
Pure Ground Bone	Brockton	35.00	29.29	19.49
" " "	Manufac'rs Sample	35.00		
Swift's Lowell Fertilizer Co., 40 N. Market St., Boston.				
Swift's Lowell Ground Bone	Fall River	28.00	28.90	1.39*
" " "	Lexington	29.00		
Hinckley's Ground Bone	Framingham	30.00	31.46	4.63*
A. L. Warren, Northboro, Mass.				
Warren's Ground Bone	Manufac'rs Sample	27.50	27.24	.95

* Valuation in excess of selling price.

Ground Bones, Dissolved Bones, Tankage and Dry Ground Fish.

Laboratory Number.	Moisture.	Nitrogen in 100 lbs.				Phosphoric Acid in 100 lbs.						Mechanical Analyses.		
		Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Coarse.	Fine
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
51	7.17	—	—	2.69	2.47	—	—	—	24.79	22.30	—	—	52.46	47.54
201 } 224 } 289 } 329 } 415 }	7.86	—	—	2.77	2.47	—	—	—	23.18	22.30	—	—	46.99	53.01
249 } 515 }	3.41	—	—	2.69	2.17	—	—	—	24.23	24.00	—	—	32.50	67.50
624	3.20	—	—	3.53	4.10	—	—	—	21.59	18.00	—	—	32.10	67.90
350 } 439 } 520 }	6.10	—	—	2.34	2.47	—	—	—	22.46	18.00	—	—	57.52	42.48
296	3.72	—	—	2.00	2.00	—	—	—	26.46	24.00	—	—	38.50	61.50
217	2.81	—	—	3.09	3.00	—	—	—	25.69	23.25	—	—	26.86	73.14
336	3.73	—	—	2.31	2.29	—	—	—	26.99	28.00	—	—	34.14	65.86
390	5.20	—	—	2.50	2.00	—	—	—	26.89	28.00	—	—	55.71	44.29
573	4.26	—	—	2.66	2.47	—	—	—	24.26	22.30	—	—	30.38	69.62
248	7.49	—	—	2.51	2.47	—	—	—	22.46	22.80	—	—	36.81	63.19
559	8.03	—	—	3.96	3.80	—	—	—	24.72	24.00	—	—	10.45	89.55
572	7.56	—	—	3.49	3.50	—	—	—	25.51	24.50	—	—	36.68	63.32
544	4.19	—	—	5.39	4.12	—	—	—	22.90	20.00	—	—	30.69	69.31
487	3.64	—	—	2.55	2.47	—	—	—	25.71	23.00	—	—	12.27	87.73
354 } 408 }	8.93	—	—	4.25	4.20	—	—	—	22.69	20.06	—	—	68.18	31.82
191 } 327 }	4.35	—	—	2.89	2.47	—	—	—	24.16	23.00	—	—	28.42	71.58
437	3.42	—	—	2.20	2.47	—	—	—	30.32	23.00	—	—	21.25	78.75
323	9.27	—	—	4.60	5.02	—	—	—	19.75	17.46	—	—	82.33	17.67

* Valuation in excess of selling price.
† Manufacturer's price (for spot cash) in ton lots.
‡ Manufacturer's wholesale price for large shipment.

Ground Bones, Dissolved Bones, Tankage and Dry Ground Fish.

Laboratory Number.	Nitrogen in 100 lbs.					Phosphoric Acid in 100 lbs.							Mechanical Analyses.	
	Moisture.	Water Soluble.	Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Coarse.	Fine.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
112 } 348 }	2.88	—	—	2.22	2.47	—	—	—	29.09	25.00	—	—	22.67	77.33
407	8.51	—	—	3.22	3.00	—	—	—	25.00	25.00	—	—	39.15	60.85
486	10.35	1.72	2.30	4.02	3.00	1.73	10.10	5.88	17.71	15.00	11.83	12.00	—	—
497	6.07	1.38	1.57	2.95	2.06	3.52	11.63	1.97	17.12	—	15.15	12.00	—	—
162	9.28	1.34	1.26	2.60	1.64	6.65	7.57	3.18	17.40	14.00	14.22	12.00	—	—
343	5.27	—	—	5.02	4.66	—	—	—	18.60	16.34	—	—	61.77	38.23
435	5.91	—	—	6.63	6.00	—	—	—	13.30	13.00	—	—	68.02	31.98
99	6.51	—	—	7.19	6.00	—	—	—	13.28	13.00	—	—	49.39	50.61
457	11.87	—	—	5.51	4.00	—	—	—	17.42	20.00	—	—	84.56	15.44
401	4.45	—	—	5.99	4.11	—	—	—	15.15	16.00	—	—	26.16	73.84
69 } 283 } 602 }	8.50	—	—	8.79	8.23	.81	4.69	1.05	6.55	7.00	5.50	—	—	—
	8.55	—	—	8.66	8.23	1.06	2.86	2.20	6.12	7.00	3.92	—	—	—
9	12.66	—	—	7.99	7.41	.81	3.44	4.35	8.60	8.00	4.25	—	—	—
1	7.71	—	—	8.75	8.23	2.00	3.33	2.50	7.83	6.00	5.33	—	—	—
55	7.57	—	—	8.77	8.24	.64	4.45	3.10	8.19	6.00	5.09	—	—	—
115	11.08	—	—	8.90	8.24	1.87	2.71	1.64	6.22	6.00	4.58	—	—	—
104	9.47	—	—	6.91	6.59	1.00	7.26	7.22	15.48	12.00	8.26	—	—	—
73	9.59	—	—	8.21	8.24	.87	3.25	4.73	8.85	6.00	4.12	—	—	—
120	9.61	—	—	8.74	8.24	1.34	4.47	2.58	8.39	6.00	5.81	—	—	—
547	9.80	—	—	7.96	8.23	1.10	3.86	3.48	8.44	6.00	4.96	—	—	—
44	8.88	—	—	9.05	8.50	.93	3.15	2.94	7.02	6.00	4.08	—	—	—

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.		
							Found.		Guaranteed.
							Water Soluble	Organic.	
Nitrate of Soda.									
Amer. Agric. Chem. Co., 92 State St., Boston.	Boston	\$60.00	\$58.20	3.09	286	2.01	15.73	—	15.00
Armour Fertilizer Co., Baltimore, Md. . . .	New Bedford .	\$58.00	57.72	.48	153	1.90	15.60	—	15.60
Bowker Fertilizer Co., Boston, Mass.	Boston	60.00	58.20	3.09	263	2.25	15.73	—	15.00
	Leominster . .	60.00			449				
Coe-Mortimer Co., 24-26 Stone St., N. Y. City	West Spring'd	55.00	58.90	*6.62	86	1.71	15.92	—	15.00
Essex Fertilizer Co., 39 N. Market St., Boston	Taunton . . .	62.00	58.09	1.56	192	1.76	15.70	—	15.67
	Dighton . . .	56.00			196				
National Fertilizer Co., Bridgeport, Conn. .	Bradstreet . .	60.00†	56.46	6.27	4	1.67	15.26	—	15.00
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Bradstreet . .	60.00	57.72	3.95	124	1.78	15.60	—	15.00
Swift's Lowell Fertilizer Co., Boston, Mass. .	Springfield . .	56.00	57.28	.66	96	1.37	15.48	—	14.93
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Taunton . . .	59.00			149				
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Concord . . .	58.00			308				
Wilcox Fertilizer Works, Mystic, Conn. . . .	Seekonk . . .	60.00	58.53	2.51	181	1.95	15.92	—	15.00
Dried Blood.									
Swift's Lowell Fertilizer Co., Boston, Mass. .	Springfield . .	45.00	48.97	*8.80	95	10.54	—	110.91	9.63
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Taunton . . .	44.00			216				
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Concord . . .	45.00			310				
Cottonseed Meal.									
American Cotton Oil Co., Greenville, Miss. .	Hatfield . . .	29.00	26.77	8.33	129	7.45	—	6.53	6.50
	Bradstreet . .	29.50	26.94	9.50	131	7.39	—	6.57	6.50
F. W. Brode & Co., Memphis, Tenn.	North Hadley	29.00	26.77	8.33	103	6.27	—	6.53	6.50
Humphreys, Godwin & Co., Memphis, Tenn. .	Hadley	35.00	35.01	*.02	6	7.26	—	7.87	6.50
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	North Hadley	29.00	27.47	5.66	106	6.67	—	6.70	6.50
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Hatfield . . .	35.00	33.83	3.45	125	6.89	—	8.25	6.50
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Bradstreet . .	29.00	27.27	6.34	130	8.17	—	6.65	6.50
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Whately . . .	35.00	33.17	5.52	132	6.66	—	8.09	6.50
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Bradstreet . .	35.00	33.21	5.38	133	6.42	—	8.10	6.50
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Southwick . .	29.75	24.03	23.80	461	8.51	—	5.86	6.50
Hunter Bros. Milling Co., St. Louis, Mo. . .	Sunderland . .	30.00	29.50	1.69	61	8.60	—	7.19	6.50
Linseed Meal (Flax Meal).									
American Linseed Co., Chicago, Ill.	Hatfield . . .	31.40	24.15	30.02	108	7.68	—	5.89	5.76
Castor Pomace.									
H. J. Baker & Bro., New York City.	M'f'rs Sample	24.00	20.62	16.39	551	6.83	—	5.03	4.75
Olds & Whipple, Hartford, Conn. (a) . . .	Hatfield . . .	24.00	23.90	.41	110	7.41	—	5.83	5.00
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	Whately . . .	24.00	20.99	14.35	122	8.40	—	5.12	5.00
“ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “ “	M'f'rs Sample	24.00	22.14	8.40	549	7.11	—	5.40	5.00

* Valuation in excess of selling price.

† Manufacturer's price in ton lots for spot cash.

‡ 95 Total phosphoric acid, 5.30 per cent.

6 potash 1.97

(a) Castor pomace.

(b) Grey pomace.

(c) Deficiency paid in full by manufacturer.

NOTE, Cottonseed meal contains from 2 to 3 per cent of phosphoric acid and from 1.5 to 2.5 per cent of potash: of which about 1.25 per cent is water soluble.

Linseed meal contains on the average 1.47 per cent of phosphoric acid and 1.52 per cent potash.

Castor pomace contains on the average 2.12 per cent of phosphoric acid and 1.20 per cent potash.

Potash Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Dealer's Cash Price per Ton.	Comparative Valuation per Ton.	Percentage Difference Between Selling Price and Valuation.	Laboratory Number.	Moisture.	Potash (K ₂ O) in 100 lbs.	
							Found.	Guaranteed.
High Grade Sulphate of Potash.								
Amer. Agric. Chem. Co., 92 State St., Boston.	Amherst	\$52.00	\$51.36	1.24	39	.95	51.36	48.67
“ “ “ “ “ “	Boston	54.00	49.52	9.04	302	1.35	49.52	48.67
Bowker Fert. Co., 43 Chatham St., Boston . .	Amherst	54.00	50.56	6.80	558	1.38	50.56	48.00
Buffalo Fertilizer Co., Buffalo, N. Y.	Springfield	48.00	49.12	2.28*	100	1.54	49.12	50.00
Coe-Mortimer Co., 24-26 Stone St., N. Y. City	Sunderland	47.00†	51.92	9.47*	54	.52	51.92	48.00
“ “ “ “ “ “	West Springfield .	46.00	50.80	9.44*	84	.54	50.80	50.00
National Fertilizer Co., Bridgeport, Conn. .	Bradstreet	47.50‡	49.20	3.45*	117	1.37	49.20	48.00
Swift's Lowell Fertilizer Co., Boston.	Fitchburg	50.00	49.72	.56	368	.67	49.72	48.00
Sulphate of Potash-Magnesia.								
National Fertilizer Co., Bridgeport, Conn. . .	Sunderland	29.00	21.12	37.31	557	6.58	24.85	26.00
Sanderson Fert. and Chem. Co., New Haven.	Bradstreet	30.00	26.80	11.94	75	1.26	26.80	25.00
Muriate of Potash.								
Amer. Agric. Chem. Co., Boston	Charlemont	43.00	41.58	3.41	584	2.87	48.92	50.00
Armour Fertilizer Works, Baltimore, Md. . .	Fall River	47.50	42.94	10.62	188	.38	50.52	50.00
Bowker Fertilizer Co., Boston	Leominster	45.00	39.20	14.80	423	2.48	46.12	48.00
Buffalo Fertilizer Co., Buffalo, N. Y.	East Longmeadow .	43.00	39.20	9.70	472	.13	46.12	50.00
“ “ “ “ “ “	Granby	44.00	43.21	1.82	501	.12	50.84	50.00
Coe-Mortimer Co., 24-26 Stone St., N. Y. City	Hadley	42.00†	44.07	2.88*	24	1.04	51.85	50.00
“ “ “ “ “ “	Sunderland	43.60			63			
National Fertilizer Co., Bridgeport, Conn. . .	South Deerfield . .	46.00	42.52	8.18	59	1.18	50.02	50.56
Sanderson Fert. and Chem. Co., New Haven.	Ringville	45.00	42.88	4.94	612	1.42	50.44	50.00
Swift's Lowell Fertilizer Co., Boston	Taunton	45.00	42.57	4.54	163	1.72	50.08	50.00
“ “ “ “ “ “	Fitchburg	44.00			369			
“ “ “ “ “ “	Concord	45.00	42.06	6.99	307	.23	49.48	50.00
Carbonate of Potash.								
National Fertilizer Co., Bridgeport, Conn. . .	Bradstreet	48.00	102.69	4.57*	3	—	64.18	65.00
Olds & Whipple, Hartford, Conn. (Veg. Pot.)	M'f'rs Sample . .	44.00	38.08	15.54	550	1.24	24.56§	25.00
Kainit.								
Amer. Agric. Chem. Co., Boston	Framingham	16.00	14.47	10.57	414	3.80	16.91	12.00
Parmenter & Polsey Fert.Co., Peabody, Mass.	East Longmeadow .	14.50	11.00	31.81	477	1.85	12.94	12.00

* Valuation in excess of selling price.

† f. o. b. Boston.

‡ Manufacturer's wholesale price. Ton lots for spot cash \$52.00.

§ Manufacturer's cash price per ton in ton lots.

§ 2.03% as sulphate, 22.53% as carbonate. Total potash 30.40. The material also contained 24.34% lime.



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